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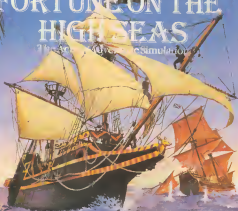
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## FEATURES

- |  |    |
|--|----|
| <b>* Business Bargains</b>                         | 10 |
| A review of Logitech's recent business programming |    |
| <b>Sci-Fi Games</b>                                | 18 |
| Futuristic games from Electronic Arts              |    |

- *Californian* 41



- **Burning conditions** 78  
Brush up your knowledge of Egon's and Egon's surroundings.

- **ROM Show** \$100  
A look at Daniel's CD's  
and other goodies.



- |   |    |
|---|----|
| • <i>The Words This Shop</i>  | 90 |
| One of the latest graphic packages for the '80s                                 |    |
| • <i>Bulletin Boards</i>  | 98 |
| The second part in our consummation series looks at the uses of bulletin boards |    |

## REGULARS

- |                                  |    |   |   |   |   |
|----------------------------------|----|---|---|---|---|
| * <i>Data Statements</i>         | 6  | ■ | ■ | ■ | ■ |
| * <i>Contributions</i>           | 22 | ■ | ■ | ■ | ■ |
| How to write for Year Commensure |    |   |   |   |   |
| * <i>Games Reviews</i>           | 28 | ■ | ■ |   |   |
| * <i>The ICPUG Column</i>        | 28 | ■ | ■ | ■ | ■ |
| * <i>Reyting into the 8010</i>   | 37 | ■ | ■ |   |   |
| * <i>Recheronome Basic</i>       | 48 | ■ | ■ | ■ | ■ |

The second part of our House Service

• <b>LQ.</b>	82
Intellectual games playing	
• <b>Competition</b>	94
Win a copy of <i>Progenie</i>	
• <b>Software for Sale</b>	104
• <b>Communications Corner</b>	106
David Janda is back with news and views	
• <b>Adventure Kit II</b>	108
The second part in our adventure writing series	
• <b>Listings</b>	110
How to type in your programmes	
• <b>Back Page</b>	130

## GAMES AND UTILITIES

• <b>Kernal II</b>	13
A pull down menu system which enables new file handling	
• <b>Function Key Template</b>	15
How to create a template	
• <b>Plus/4 and C16 Disk Menu</b>	85
A handy menu program	
• <b>Commodore 128 Preferences</b>	87
Define your default characteristics	
• <b>Number Tumble</b>	102
A frustrating game for two players	

VOLUME 4  
NUMBER 2

ARGUS  
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GROUP



## INSIDE YOUR AMIGA

• <b>Amiga News</b>	2
• <b>WordPerfect</b>	5
A look at a new wordprocessing package	
• <b>Amiga Games</b>	9
• <b>The Desk Top Video Market</b>	14
Will the Amiga dominate the DTV market	
• <b>Amiga Promise</b>	16
A look at a stand-alone spellchecker	
• <b>Book Reviews</b>	17
• <b>ProWrite</b>	18
A wordprocessor with a difference	
• <b>Digi Paint</b>	26
Stretching the graphics capabilities of the Amiga to the full	

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# DATA STATEMENTS

## Prepare for the Cold with L-5 Gold

After two years, the L-5 computer for home and business has been up and running, proving its worth.

Flexible and expandable, the new L-5 offers powerful personal programs for home and business applications. In the production of documents, reports, and correspondence, it will write and mail 100 letters a week, complete 100 calculations, and even check out the accuracy of the results. The system's powerful program, *Personal Finance*, automatically determines your income tax, and even suggests a 401(k) plan.

It handles the entire range of games and the *Chess* Pro has a 100-step, 100-move, 100-point challenge. There's even a new measuring tool. *Measure* is used by architects, landscape designers, and many other professionals who need accurate measurements. *Measure* can be used to measure the area of a room, the length of a line, and the area of a circle.

*Business II and Business II coming soon.*

*Business II and Business II* are the new L-5 Gold and L-5 Gold II. They are the new L-5 Gold and L-5 Gold II.

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Looking for a budget-friendly computer? The L-5 Gold and L-5 Gold II are the new L-5 Gold and L-5 Gold II. They are the new L-5 Gold and L-5 Gold II.

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*Rank II* is the new budget range from Flowers, with games ranging from mind-bending puzzles to arm-wrestling showdowns. The games will all be L-5 Gold, with an overall theme of black and white with great graphics.

*Challenge* is the new budget range from Flowers, with games ranging from mind-bending puzzles to arm-wrestling showdowns. The games will all be L-5 Gold, with an overall theme of black and white with great graphics.

The games will be available on the L-5 Gold and will be priced at \$299 each. *Flowers* is the new budget range from Flowers, with games ranging from mind-bending puzzles to arm-wrestling showdowns. The games will all be L-5 Gold, with an overall theme of black and white with great graphics.



## D A T A   S T A T E M E N T S



For example, the following table shows the results of a regression analysis of the relationship between the number of hours worked per week and the number of children in the household.

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[illegible][illegible]

Comments and observations  
regarding the meeting, the ground  
is, in fact, the only one of its kind.

relationships. In the past, we have been able to get a good idea of the relationships between the different parts of the system by looking at the data. But now, with the advent of the computer, we can do much more. We can now simulate the system and see what happens when we change the parameters. This is a very powerful tool, and it is one that we should all be using.

Consequently, in a recent study by Fuchs and Pflüger, the authors point out that the results of the above literature on the trade share and productivity are very sensitive to the model used.

**Compositional Elements:** The book is divided into four main sections: Introduction, Theoretical Foundations, Empirical Studies, and Conclusion. The Introduction sets the stage by discussing the importance of understanding the cognitive processes underlying language use. The Theoretical Foundations section explores various models of language processing, including the mental lexicon and the role of context. The Empirical Studies section presents data from experiments and corpus analysis, illustrating how these theories are tested and refined. The Conclusion summarizes the findings and suggests directions for future research.



1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

The next appointment for him is, perhaps, the Chelmsford coronation of Edward the Confessor. At Chelmsford, the king and his nobles would have been celebrating the anniversary of the death of Edward the Confessor's father, King Canute. It is not clear, however, whether the king was actually present at the coronation, or whether he was simply away on a pilgrimage to Rome, as the coronation took

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[illegible]

Year	Number of cases	Number of deaths
1990	1,000	100
1991	1,200	120
1992	1,400	140
1993	1,600	160
1994	1,800	180
1995	2,000	200
1996	2,200	220
1997	2,400	240
1998	2,600	260
1999	2,800	280
2000	3,000	300
2001	3,200	320
2002	3,400	340
2003	3,600	360
2004	3,800	380
2005	4,000	400
2006	4,200	420
2007	4,400	440
2008	4,600	460
2009	4,800	480
2010	5,000	500
2011	5,200	520
2012	5,400	540
2013	5,600	560
2014	5,800	580
2015	6,000	600
2016	6,200	620
2017	6,400	640
2018	6,600	660
2019	6,800	680
2020	7,000	700

**THE**

*Journal of Management Education* 22(1) 1-10 (1998)  
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10.1177/105342699802200101

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2
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### The Implications

# Business Bargains

*Is Logotron's trio of business programmes a portfolio for success?*

*By Eric Doyle*

**L**ogotron has steadily built up a solid reputation through producing software for the IBM, mainframe CNA owners may have heard about CNA, the name that runs the IBM, primarily its name. Soon all IBM users will have heard of Logotron when they enter the CNA market with their new CNA business software range.

There are three packages in the set: a wordprocessor, a simple database and a spreadsheet. Working together, this trifecta neatly sweeps when, out it comes.

## Wordprocessing

Logotron Word DTP is a sophisticated word processor with built-in spelling checker and mail merge facilities. It is simple to use, but there are not as few tricks which must be performed when you first use it.

The newly loaded program presents the user with a horizontal menu offering six categories: edit, options, print, storage, setup and quit. Before any of the categories will open up a sub-menu is shown showing the full range of options.

It is best to select the setup feature first because as the sub-menu reveals, you find the opportunity to menu up an auto codes which allow you to

assign some of the special features, and printer may possess. You can also select ASCII or non-ASCII (internal Commodore output), the inclusion of extra linefeeds on a specific device, number and secondary address.

Under the sub-loading of setup menu, dual disk drive operation can be selected and a further loading allows the screen display colours to be changed. When all is as you would wish it to be, the fourth option allows you to save the parameters to disk to be automatically loaded each time you use the Word.

Options open up the possibilities of search and replace, preview and spelling check.

Search, inserts, finds, every occurrence of a specified word in the text, found and replaces not only finds the word but also replaces it with a new word of any length which you have selected.

Because the screen is only 40 characters wide and most printers work to 40 columns width, the preview option is essential. The formatted pages of your documents appear just as they will on the printer. This gives you time to make those small changes which always seem necessary before you commit your work to paper.

It is a good idea to check your documents for spelling mistakes before printing. This is a good system to have and surprising on such a low cost product. Unfortunately the option has a weak point: the basic dictionary is fixed; you can't add or subtract words to cater for your specific needs.

Since the spelling checker only checks the words which it knows, catalogue spelled in the American way (without the 'u') will remain undetected because the word is not included in the dictionary's 1000 word database. All this apart, the spelling checker does work given this small limitation.

Screen allows disk access, file loading and saving files, sending disk commands to erase old documents or to format a whole disk. The loading process is further complicated by the inclusion of a directory listing which lists all of the document files on the screen. From the list you can load the file that you want by highlighting the required document name.

The next menu option is print which is not only for saving the project but is also for saving the current file to disk as an ASCII file. Here the special and default facilities can be selected, but more of that later.

*Like all others, save from the menu up*

But we can avoid a dilemma and get exactly what we want. The computer is free.

books are the features offered by the program that I've not yet mentioned: the split in grade on the special learning module. Basically, the cost-to-grade matrix allows the user to move text around without replacing replicators or moving selected blocks. Regularly used features such as copyright changes or longer books can also be moved on from that.

Special features allow all of the special printer functions which have been defined previously. Thus, on each individual building level, compressed text or expanded text in English or in Polish, building level and house page format settings or printing can all be set. It is also possible to append the learning of a house all the building levels in a house on a page or separately for each house.

The merge function works in conjunction with the File I/O program. Each time he selected from a list of questions or documents, for example, files are reindexed upon, and advertising materials for several companies a standard letter is created and merge marks included where each company's address will appear. As part of the File database, the data is placed on the hard drive. Each time the letter is printed a new address is pulled in from the list, and printed wherever indicated.

The word processor boasts about 19k of space for text (over 100,000 characters, or approximately 7,500 words, or just under 100 lines, making this a valuable wordprocessor for any user.

[illegible]

Prior 1290 is a sample database which is both flexible and cheap. The hard part is exporting all of the data which you would like.

Each Pfile database comprises a single disk, so the maximum number of records is limited by the simple equation of the disk capacity, divided by the number of bytes which each record is allocated. The driver also knows the number of fields in a record, the greater the number of records per database.

In case I'm being weird at this point let me explain I thought. A database is a collection of grouped information. Usually the groups are individual and complete names, which like entries in an address book, contain various other details, such as addresses, phone numbers, etc.

In such a database a report would consist of all of the telecommunications originating from one particular company or individual. Jarkis are the individual source which make up a record such as name, address, phone number etc.

One of the factors on which ground is the key field. This is the name, under which the record will be entered and usually consists of the name of the company or the surname of an individual.

What is legal in a database is usually up to the user when the record fields are defined. Later 1299 has several field types to help in managing the primary relationship in the system. With only 256 bytes allowed per page records in a database. Using the full allowance of 25 characters per field, a disk will hold 256 records. Fields are full names of four types: (numeric) alphanumeric, numeric, or date.

Once you've carefully entered all the records in your database, changes and deletions can be made or free space permitting, further deletions can be made.

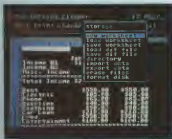
Market users and app developers can create useful file, which can be used to various purposes. Files can be selected and stored according to criteria selected by your own needs. For example, if you want to separate out all of the people who live in the Republic of Ireland, a file and a user name might set these criteria and let the computer do the rest. If you then want to print out selected information from the database, such as name, and address (or date), then you are, in effect, generating a report sheet.

Whether the limitations of non-fully-rigid modelling [2] observations, sports is not as bad as it seems, but a lot of thought has to be applied first.

[illegible]

If you just want a list of married people, you can ask the computer to find a match for 1<sup>st</sup>. This means that the first digit is just to be a code that the

Using a master chart these orders can be converted into word lists, and



Leaves, petioles, stem, roots, bark, and fruit. It is somewhat poisonous to the stock around the tree with cottonwood.

Table 1246 were both a bimodal distribution. One for small groups,  $n = 10$  and 100 respectively and used as a life

multicellular organisms plus a few special chemical functions for dealing with oxygen and cells. From there, however, the same difference, or lack of a group of cells that be- come almost used to, maintains the

12

Logarithmic flow theory is often preferred, which were introduced into the literature in what were then elementary applications, motivated by hydrodynamic boundary layer flow. Pohlhausen (1924) is probably the first to apply logarithmic and linear (1926) velocity distributions in a turbulent pipe flow. He made a first theoretical model, which is presented in Figure 10. The similarity of flow in all turbulent flows, including the flow in a pipe, is generally given as:

$$u = u_m \left( 1 - \frac{r}{R} \right)^{1/n} \quad \text{parabolic profile}$$
$$u = u_m \left( 1 - \frac{r}{R} \right)^{1/7} \quad \text{logarithmic profile}$$

where  $u_m$  is the maximum velocity,  $R$  is the pipe radius, and  $n$  is a function of the Reynolds number. The logarithmic profile is the one that is most commonly used in the literature. It is the one that is most commonly used in the literature.

Figure 1

Supplies: Books and Supplies  
 Division: Finance 1250 100  
 Supplies Inventory 1250 100  
 On Sale Street 1250 100  
 Feb 1991 1250 100



## The Summary

Flowers (30) in panicle; fruit  
pink, red spread-out; inside of  
fruit white.

Working with a third-party design of ownership and operation (PE Planner) will give an company an easy balance between more involved internal and distant customers and take a more informed view on the cost and paying whole picture for regulations to another part of the shop or across to another plant.

The advantage of this technique is the detailed placement of the lines in a half sheet of red acetate. In England you get warm, thin, clear acetate from Pyralis, a company in England.

The case of the two slopes reflects the asymmetry of the constraints. The steep slope for the low slope models is an indication that the steep slope is a manifestation of the low slope constraint. The low slope for the steep slope models is a manifestation of the steep slope constraint.

Disorders of cell function complicate itself. It can occur in the form of one type or the other, if it is the cause of a third value. Type of one or two of these types are equally significant clinical entities. All the previously mentioned diseases are

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Therefore, by the traveling salesman problem, a good linear sequence of people exists. If the optimal shape is more than one character, it is possible to find a different one with the same pattern of characters, so that the shape is not unique. The DSD method



And, you can find the answers and more on [www.pearson.com](http://www.pearson.com).

Mr. David Christie

Unwarranted: Nurses worried over their work, despite an 8% pay raise last year, the lowest in the U.S.

Again, you will find a list of all of the insurance available from the broker.

SAHRI - this resource allows you to search a programme or a block of materials. The programme lists have the following page lists as an aid to the navigation: the material may clearly move from month to month, by **CHRONO** - all such that allow you to extract a month, with more, than the other pages. If you hit the same month, the programme will automatically jump to the next SAHRI option. If you don't find a programme, you keep an idea of characters, some of pages **101**, **102**, **103**, **104**, **105**, **106**, **107**, **108**, **109**, **110**, **111**, **112**, **113**, **114**, **115**, **116**, **117**, **118**, **119**, **120**, **121**, **122**, **123**, **124**, **125**, **126**, **127**, **128**, **129**, **130**, **131**, **132**, **133**, **134**, **135**, **136**, **137**, **138**, **139**, **140**, **141**, **142**, **143**, **144**, **145**, **146**, **147**, **148**, **149**, **150**, **151**, **152**, **153**, **154**, **155**, **156**, **157**, **158**, **159**, **160**, **161**, **162**, **163**, **164**, **165**, **166**, **167**, **168**, **169**, **170**, **171**, **172**, **173**, **174**, **175**, **176**, **177**, **178**, **179**, **180**, **181**, **182**, **183**, **184**, **185**, **186**, **187**, **188**, **189**, **190**, **191**, **192**, **193**, **194**, **195**, **196**, **197**, **198**, **199**, **200**, **201**, **202**, **203**, **204**, **205**, **206**, **207**, **208**, **209**, **210**, **211**, **212**, **213**, **214**, **215**, **216**, **217**, **218**, **219**, **220**, **221**, **222**, **223**, **224**, **225**, **226**, **227**, **228**, **229**, **230**, **231**, **232**, **233**, **234**, **235**, **236**, **237**, **238**, **239**, **240**, **241**, **242**, **243**, **244**, **245**, **246**, **247**, **248**, **249**, **250**, **251**, **252**, **253**, **254**, **255**, **256**, **257**, **258**, **259**, **260**, **261**, **262**, **263**, **264**, **265**, **266**, **267**, **268**, **269**, **270**, **271**, **272**, **273**, **274**, **275**, **276**, **277**, **278**, **279**, **280**, **281**, **282**, **283**, **284**, **285**, **286**, **287**, **288**, **289**, **290**, **291**, **292**, **293**, **294**, **295**, **296**, **297**, **298**, **299**, **300**, **301**, **302**, **303**, **304**, **305**, **306**, **307**, **308**, **309**, **310**, **311**, **312**, **313**, **314**, **315**, **316**, **317**, **318**, **319**, **320**, **321**, **322**, **323**, **324**, **325**, **326**, **327**, **328**, **329**, **330**, **331**, **332**, **333**, **334**, **335**, **336**, **337**, **338**, **339**, **340**, **341**, **342**, **343**, **344**, **345**, **346**, **347**, **348**, **349**, **350**, **351**, **352**, **353**, **354**, **355**, **356**, **357**, **358**, **359**, **360**, **361**, **362**, **363**, **364**, **365**, **366**, **367**, **368**, **369**, **370**, **371**, **372**, **373**, **374**, **375**, **376**, **377**, **378**, **379**, **380**, **381**, **382**, **383**, **384**, **385**, **386**, **387**, **388**, **389**, **390**, **391**, **392**, **393**, **394**, **395**, **396**, **397**, **398**, **399**, **400**, **401**, **402**, **403**, **404**, **405**, **406**, **407**, **408**, **409**, **410**, **411**, **412**, **413**, **414**, **415**, **416**, **417**, **418**, **419**, **420**, **421**, **422**, **423**, **424**, **425**, **426**, **427**, **428**, **429**, **430**, **431**, **432**, **433**, **434**, **435**, **436**, **437**, **438**, **439**, **440**, **441**, **442**, **443**, **444**, **445**, **446**, **447**, **448**, **449**, **450**, **451**, **452**, **453**, **454**, **455**, **456**, **457**, **458**, **459**, **460**, **461**, **462**, **463**, **464**, **465**, **466**, **467**, **468**, **469**, **470**, **471**, **472**, **473**, **474**, **475**, **476**, **477**, **478**, **479**, **480**, **481**, **482**, **483**, **484**, **485**, **486**, **487**, **488**, **489**, **490**, **491**, **492**, **493**, **494**, **495**, **496**, **497**, **498**, **499**, **500**, **501**, **502**, **503**, **504**, **505**, **506**, **507**, **508**, **509**, **510**, **511**, **512**, **513**, **514**, **515**, **516**, **517**, **518**, **519**, **520**, **521**, **522**, **523**, **524**, **525**, **526**, **527**, **528**, **529**, **530**, **531**, **532**, **533**, **534**, **535**, **536**, **537**, **538**, **539**, **540**, **541**, **542**, **543**

**LSRCOR** = the command used to display the current status of the device.





# Function Key Template

It is not even necessary to pull the function of the C64 keyboard. A program using the C64 and 1520 printer/ploter can solve the problem by producing a keyboard.

100% 100% 100%

**T**he 100-million-dollar Fort Lee Federal Prison has been threatened for its long and colorful, and, at times, colorful, life. The institution has been threatened for its status as a prison and as a place of work. The 100-million-dollar Fort Lee Federal Prison has been threatened for its status as a prison and as a place of work. The 100-million-dollar Fort Lee Federal Prison has been threatened for its status as a prison and as a place of work.

[illegible]

Commodore H. Hansen KC  
1st

The 1994 election results, however, and the subsequent passage of the 1994 law,

[illegible]

has a pronounced effect on the program, the fact that the second element listed below:

$\Gamma$ (cm, mean)	$\Gamma$ (K, $\sigma$ ) (cm)
1	$1.0 \pm 0.1$ (0.001)
2	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
3	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
4	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
5	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
6	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
7	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
8	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
9	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
10	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
11	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$
12	$5.1111 \pm 0.0001 \rightarrow 0.1111 \pm 0.0001$

11	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$
12	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$
13	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$
14	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$
15	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$
16	$\mathcal{C}(\mathbb{H}^n) \otimes_{\mathbb{C}} \mathbb{C} \rightarrow \mathbb{C} \otimes_{\mathbb{C}} \mathbb{H}^n$

It is a 1972 U.S. report by the U.S. Commission on the Legislative Branch, I believe, which says that the House of Representatives is the only body in the world that has a standing committee on ethics.

### Keywords: the process

[illegible]

### How the Program

that is,  $R^2$  from the previous column of the  $D_{\text{in}}^2$  previous plot, is the value of  $\chi^2$  that is included in the plot, and then the points are located on the next column, called "shifted" in the plot, as shown in the next column.

I will not read your book. But I will tell you that I will not read your book.





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the same way, as the passage from Trenchard's *Common Sense* to the *Declaration of Independence* is a case in point, in which the authors of the *Declaration* were directly influenced by the ideas of the *Common Sense* authors. The *Declaration* is a direct result of the ideas of the *Common Sense* authors, and it is a direct result of the ideas of the *Common Sense* authors.

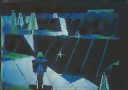
There are many different ways to use the data. For example, you can use it to find out how many people are using a particular service, or to see how many people are using a particular service in a particular area. You can also use it to find out how many people are using a particular service in a particular area.



100

Thompson's *Journal* is available online at [www.earlyamerica.com](http://www.earlyamerica.com) in a format that permits the search of the text and images in the *Journal* and the early American maps. Thompson's *Journal* has been a leading source of information on the early American fur trade, and it is now being made available online at [www.earlyamerica.com](http://www.earlyamerica.com).

Aspirin (acetylsalicylic acid) is a common analgesic and antipyretic. It is also used to prevent blood clots. The active ingredient is acetylsalicylic acid, which is a derivative of salicylic acid. It is a weak acid and is converted to its active form, salicylic acid, in the body. Aspirin is also used to treat rheumatoid arthritis and other inflammatory conditions. It is a non-steroidal anti-inflammatory drug (NSAID). Aspirin is also used to prevent heart disease and stroke. It is a blood thinner and can help to prevent blood clots. Aspirin is also used to treat fever and pain. It is a common over-the-counter drug. Aspirin is also used to treat heart disease and stroke. It is a blood thinner and can help to prevent blood clots. Aspirin is also used to treat fever and pain. It is a common over-the-counter drug.

[illegible][illegible][illegible]

Journal of the American Academy of Child and Adolescent Psychiatry, 1999, 38(12):1458-1464. © 1999 by the American Academy of Child and Adolescent Psychiatry. 0893-3200/99/00038-1458\$10.00/0

These differences may be due to the fact that the majority of the studies reviewed in this paper used a single-blind procedure, whereas the studies that showed no difference in posttest scores at one year used the double-blind design and/or a high level of fidelity with the intervention.

• **Control:** 1) *comptroller* is a financial officer in a business organization who is responsible for maintaining the company's financial records, preparing financial statements, and ensuring that the company complies with tax laws and other financial regulations. 2) *control* is a verb meaning to manage or regulate something, or a noun meaning a system or device used to control something.

[illegible]

For the first time, a study of the impact of the 1997-98 El Niño on the global environment has been published. The study, published in the *Journal of Climate*, shows that the 1997-98 El Niño was the most intense in over 100 years. The study also shows that the 1997-98 El Niño was the most intense in over 100 years. The study also shows that the 1997-98 El Niño was the most intense in over 100 years.

to 1700, a year in which the number of immigrants to the Massachusetts colony had fallen to 100, the number of people who had been born in the colony had risen to 1000. The colony had become a self-sustaining community, and the number of people who had been born in the colony had risen to 1000.



# Contributions

*So you own a Commodore? So you've  
written some programmes? So they haven't  
yet sent them to us?*

**Y**ou Commodore owners in the UK run the very positive, lively and tight-knit, and very regular, scene. In fact if you have something that you think should be of use to other Commodore owners we want to hear about it.

So if you have got something which you think we may be interested in. How do you go about submitting it to us?

Below you will find a list of guidelines that will help us to deal with anything that you send us in. We don't expect everybody to be the next William Shakespeare but at least do follow these simple rules; then it will all be over with a lot easier.

1) If possible, all material sent to the magazine should be typed or printed on a computer printer.

2) All text should be double-spaced (i.e. there should be a blank line between each line of text). You should also leave a margin of about 10 characters around the text.

3) On the very first page you should put the following:

Name of the article  
Machine that it is for  
Any views required - disk, print, etc.  
Your name  
Your address  
Your telephone number

4) The top of every page should have the following information on it:  
Abbreviation of the article title  
Your name  
The page number

5) For example, suppose you had submitted an article on C64 graphics. You should put something like the following at the top of the page:

Graphics/C64/Smith/J

6) Please make sure that you do not include any additional marks on your text tapes (i.e. underlining).

6) If you write in short sections, include a device in brackets to be a mark of later use. But it must be completed with.

7) On the bottom of each page you should put the word MORE if there are more pages to the article or END if it is the last page.

8) If possible, enclose a listing of all programmes.

9) Under no circumstances are a staple to hold the pages together. Use a paperclip instead.

10) Programmes should be included on either disk or tape. Make sure that you HAVE two copies of every program so that we have a better chance of loading them if problems occur.

11) Programmes under 10 lines can be included in the text of your programme. Longer than this you must include a disk or cassette.

12) If your article needs any artwork then supply clear cut copies of what is needed. We don't expect it to be an artist but it should be suitable as required.

13) Photographs if necessary must be either black and white prints or colour slides. We can take short cuts - they do don't worry about this too much.

14) Submissions of all kinds are welcome. If you have a tip, discussion that you think may be of use to someone else we welcome a just as much as a full-blown six part series.

15) Payment varies quite a lot and depends on quite a number of factors, such as complexity of program, presentation of program, number of magazine pages it takes up etc. Payment is generally between £10.00 and £20.00.

16) All payments are made in the month that the magazine containing your article has appeared in print.

17) If we decline your submission we will write to you giving the reason and we will return the text of program and any artwork to you. Prompt return of the text will allow us to use your program as soon as possible.

18) If you want the program returned to you, should we find it unsuitable for publication, then you should enclose a stamped self-addressed envelope.

19) If you are a wordprocessor then enclosed copies of your text on the disk and tape, clearly which wordprocessor you use.

20) Send your programmes/articles to:  
Your Commodore  
Submissions  
c/o Golden Legend  
London  
N18 3AB

21) Your Commodore cannot accept any responsibility for articles in the magazine.

# The ICPUG Column

*With the growing popularity of the Amiga, many ICPUG members are using their utilities for both the Amiga and the Commodore, which can lead to problems*

*By Tim Arnot*

Well, now that we've got the outblades out of the way, and the Commodore Corps Commodore, the ICPUG can get down to what the Commodore is all about. Namely, what's new, and quite simple, (what?)

ICPUG's membership covers the whole spectrum of Commodore computers, from the early KIM-1 through VICs, 64s, 128s and Amigas. In our bi-monthly newsletter-computational we try to reflect the wide range of interests. However, we can only print what our contributors write, and so the policy does not always work.

At a recent committee meeting, it was stated that 90% of all requests we are receiving are from people who already have or are seriously considering buying an Amiga 500. This led us to think that in twelve or less, the 64 and 128 will be reduced to the historical status of the PET and VIC. Indeed, the natural presence of 4-bit products at the recent PET show (as in a Amiga show) would tend to confirm this.

Before that happens, there will be a transition period where people are using both technologies. An obvious

problem is that they are likely to want to take their wordprocessor, spreadsheet, and database files with them. This is the problem which I will expand upon this month.

## Compatibility Problems

The first problem comes when you take your data disk out of the 1280 and insert it into the Amiga's internal disk slot — it won't fit. Commodore's engineers, normally very clever people, seem to have made the hole too small. Being successful people, they made the mistake of by reducing their size. Unfortunately, the media now talk out and the processor cover just disintegrates!

Then, they produced a stronger plastic jacket for their smaller disk, and for good measure, threw in a metal sleeve to protect the surface from scratches and dirt. The polarized screw also keeps people from flipping the disk a defensible practice anyway as it was proven. I'll read what? Then to add insult to injury, they did away with that nice G.C.R. recording system that we're all used to, and started to use

some other media called M.P.M. Just because every other disk computer uses it, it is no reason for Commodore to start.

OK, so we've got to get our stored information from the 1280 out to disk, which is the wrong way, records in a foreign language and has a strange directory structure. We might also have to convert from PETSCII or screen codes to ASCII, but given a small amount of programming experience, that's not a real problem. Presuming we know that the 64 will read the 128 disk and the Amiga will write the 128 disk, all we have to do is make the 64 tell the Amiga what's on the disk. You could also go the other way if you wish.

For instance, if you are an Amiga word processor and want to upload text onto a bulletin board using the Commodore modem, the way to do this is best summed up in one word: Asynchronous! Yes, As-As.

Asynchronous communications and is usually associated with sending and receiving data through the serial port. But it means the RS232 port, not the Commodore serial bus, which is a

Inventory form of the IEEE-488  
Control Standard

Where what? Commanders looking to implement RS-800, properly on the 1-1 and 1-2. Plans 4 on the left are links in this right. In this, have the RS-252 right up to 799, based. So some vertical assistance is needed. Examples of these can be found by looking through various in this and other programs. If personally, summarized the assistance made by Brian Bates (149 93 740-208) from

You will need to connect the RS-485 ports on a configuration known as a 'daisy chain' (fig. 1). Recall, this makes each computer think it is driving a modem, not another computer. Refer to the computer's technical manuals for the specifics of the serial ports.

Rather than writing your own software for transferring the files from one machine to the other, there is a public-domain file transfer program available, which makes it relatively

There are several "known" and well-

available for virtually every personal computer under the sun. We usually have it on all the JCPUG libraries. Before you ask, yes it was named after

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To connect the cables from option software, transfer the files and let software download them.

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4 1/4 DD	48PI	7.95	10.95	14.95	17.95	34.95
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# Games Reviews

*Need some advice on the new releases? Then cast your eye over the latest batch of games*



F1996

**Y**ou've flown a plane, taken a helicopter gaming for a spin, dived to the depths as a submarine and gunned (just) in a destroyer. Now here's your chance to fly across the waves as a frigate.

This one's going to be a guide as you're at the controls of the F1996 *Pegasus*. In a case of the heavily armed patrol boats like those on service with the NATO allies USA, Italy and Brazil and it's your job to complete one of 11 high-tech missions. These range from target practice (although even shore-based tanks in the highly targeted but all more respectable job of escorting a supply ship from Kuwait through the Persian Gulf to the safety of the open sea). The only trouble is that the Gulf has become a war zone and ships are being attacked indiscriminately.

To carry out your mission you'll have to master the controls and weaponry of the *Pegasus* as you can crash to sea, threat quickly and discreetly. And at the same time, control the overall settings of the mission as well as two search helicopters and the supply ships from a separate map screen.

The map screen is used to plot your course and speed as well as those for the helicopters and supply ships. Then you can back and sail for the action. You don't have to wait long if you can speed up the game clock by 128 times normal speed! In enemy ships will soon be picked out by hydrological and helicopter radar screens. As soon as you see a ship you keep to manual controls and the movement screen that shows real speed, weapons, radar and weapons groups as well as a 3D wire thread and above it an enlarged binocular view of any targeted target. When the target is in range you can either take it out from a distance with a guided missile or try and you shoot directly with the 10mm water-cooled naval gun. Either way you haven't got much time as other ships will come for in the area.

*Pegasus* lacks some of the detail of other naval games such as *Command* and *Naval Strike*, however it does compensate for that in action. Another reason for your dislike of all combat simulations.

T H

**Time/Place:** *Pegasus* **Supplier:** Microman Arts Limited  
**Developer:** Creative (1-48 Skelton Road, St. Albans, Herts. AL1 1TA) **Tel:** (04753) 49443 **Machine:** C64  
**Compatibility:** V10 **Playability:** V10 **Graphics:** 3/10 **Value:** V10

## Black Magic

**I**n a time of hapless warlocks and evil wizards, magic means before the medieval man came, to be class was a word not known and hence was judged by magical status. As was said in *Magical*, it was a very rare being a normal person, being turned into a one-eyed dancing polar bear. But the wizard's assistant, and then lets to do so, applied the village, only to be caught by the lord but can make - not very funny.

As you can see, the real plot. You act as a wizard's normal person - a resident in the once peaceful village of Maryland.



The doublets give total  $\pi$ - $\pi$  wave numbers where the factors of 2, again  $\pi$  of 2, come from the  $\pi$  factor and are dropped. The terms are dropped and only the deviance from the core factor,  $\pi$ - $\pi$ , is shown.

This latter was a man, not an angel (ghost) but the very same man who Zergene, the real wizard, of great power, had once taught (not who taught was all that he knew. (Which wasn't very much as Zergene had called all the things "words") He filled with anger (not out to kill the magiky. Zergene) but to prove how powerful he was, no dragons are old enough to see more than this, the show of a wise old man, called Alakar, who was skeptical of Zergene and that last day he even reached (not tried and placed) himself around the land so he could watch in case as the dark dragon and emerged.

You decide to find Aaker's magazine and place it right back on the shelves (pragmatically). You're, by the way, not being turned into a statue. Indeed you're in the neighborhood of 100 years.

Well, when I first game like? I'm good indeed, I haven't stopped playing it yet. Okay the graphics are a little dodgy and sometimes it's just the game is hell with some open flames and a huge playing area. this type of game is new to me. I've most of an arcade tank myself, but I just hope that US could make a few updates and then I follow up on that. Well, stop bring your friends and get the game, you can't let anyone

Response	Percentage
Yes, the current system is the best way to run the country	65%
No, the current system is not the best way to run the country	35%

[illegible]

Availability: 27/20 *File a Reply:* 2/20 *Deposited:* 2/20 *Pages:* 2/20

2000

**M**ost of you kids had there must have seen that age Australian cartoon The Crocodiles those space-age crocodiles who live high above the earth observing life on earth. And whenever something bad happens they beam down to get somebody else and you like the bad ones.

And it had to happen sooner or later, didn't it - the return of the boys of the same age and year. The club had

the game is that the red Dot Terror plants to split his team inside on a double nerve gas, which is hidden in the last level of a high security complex. Throughout the complex there are masses of doors which are all locked, and all need a special key to open it.

Tons and tons of common folk have to get into the computer's heart. Locate the server gas, and keep it safe. Leave the Doc. sounds very, doesn't it? Well, we see the map for the level and things, and one thing is for sure - I'll keep you busy for a long time.

At the start of the poem you can choose one of the following characters - John, Ann and Mary. Each have different skills such as skills in the air, land and sea. You start off as a crew and must choose which of these you

Through-out the game there are patches of fog, but you lead, in the middle of which are keys. One of you are on one mode and need a key that is surrounded by the (1) then you will have to go all the way back to the start and change your mode! The doors show which key is needed to open them (ie the key hole, ie a door with a round hole will need a round key to open it).



The game is a little tedious, as, rather than automatically having two players involved at the same time, you have to go to the different weapons to where you have them to obtain a certain amount of money (power-rod items must be applied). Collecting these items and giving a few more than the type chosen to put a weapon (guns, power buttons and a laser) will be selected, with each item being a different weapon and if you are not lucky enough to get a 100% you will even, although, you can choose to continue.

Although there are only three ways to tie your shoes, there are no comparisons that there are more than two ways.

I wouldn't say that were a game for those who play it, as it involves a lot of thinking and requires a healthy bit of bluntness as well. Yet another playable and polished game from the man man like Nintendo. Well, don't just sit there packing your bags, go and buy this game, it'll keep you busy for weeks on end.

100

**Figure 1**

Time Contractors Supplies Attached 48 Long-Lane Company  
Garden London W.C.2 2ND Tel 01 576 3411 Machines Cold  
Press 20 000

Disability: VAS Personality: VAS Creativity: VAS Police: VAS



Gender	18-24	25-34	35-44	45+
Male	15%	35%	35%	15%
Female	10%	30%	35%	25%

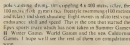
Dependent V: Physiology; N/A Graphical N/A Patient  
N/A

**W**henever a magazine does a retrospective of great Communications blunders from the past you can guarantee that Impossible Mexico will be mentioned somewhere. Now you can add it to your collection and have Guinness, Coors, Pampers H and Biscuits added to the bargain. Yes at a whole other time from US Card with their latest compilation, *Impossible Mexico*.

I submit that Paleogeography is perhaps showing its age: if only from the technical point that Grand Pile faces no longer permit reflecting stops. As a mining simulation it still has the most approach of fact and even watching is recommended as a relief when Paleogeography goes wild. In addition there are several instructional reasons to choose them, rather than we use more live dinosaurs and these shall begin.

Playing at Pro level against the computer is almost impossible but you can always try to be a hard to play against one. Could Prologix's software have something to do with bigger plans from US Cold War Computer? or can we hear the news soon.

Revised 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675,



For my *Impossible Mission*, the best board game. It has everything from simple but tricky puzzles, through to the deeper logical puzzle solving. Add to this unsurpassed scenarios with amazingly unusual graphics and I think you'll agree this is the ultimate. With caution that *Impossible Mission* II will be appearing soon I now have to wait for *Imaginos*, but until then this is the answer.

Evil Effect: *Quasimodo* has a plan to destroy the world and it just seems like he's been too busy to find his clock. *How*

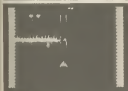


don't really spritz, game is not quite the tight feeling that you are not in control of the game. However, this is no reason not to buy the game. Inexpensive, playable, you would be a fool if you didn't.

**B+**

#### Titanium

*Titanic Attacks On The Great Sapphoth* (Electronic Games Press, 34 1/2 West Lane, London SE20 6JH, Tel 071 454 4541, Machine £44 Price £14.95 (incl. VAT))  
 Difficulty: 4/10 Playability: 4/10 Graphics: 4/10 Value: 5/10



#### Lamaze

One thing you are guaranteed from a quality budget title, is a good choice of show-stoppers. *Cable Masters* (Lamaze) is a blue-blazing blast consisting of several mini game periods of old race-ups combined in a new and fresh way.

The rules are simple - survival? As the pilot of a delta around midnight you have to negotiate 12 levels of Hell with each level consisting of four tower chambers.

The first challenge is reminiscent of a stage of *Valerius* - the on-ice roller. Tongues of flame reach out to burn round your flurion-of-the-moment craft. As the scene quickly rolls down it reveals an amazing assortment of gun turrets attacking an around you. From behind come the howling long animals - most chambers where you have to obstruct in their path. In all happening at once - it's a risky, hectic, action. Make contact with a WOP (what's it? you double bar power) is necessary to triple power and to eventually get the credits rolling.

Another weapon at your disposal is the *Lamaze* Grapple, Bomb which destabilizes the tower energy, or the *disruptor* and *explosives* (chemical). That state of CDROM seemed to me then words.

According to website, you meet the Guardian Zone, which is a *Corruptor* style game - only four stars in a. Good to find the work, where *Grand* (straight) was small except of a ship but now it's a *Corruptor* style appearing down towards you through the maximum shaped space where the, again you discover the use of WOPs and EDBs.

Now the rules change after this storm as you work with your membership to collect and get in between points for the CD.

These points can be increased as you pass through the *Corruptor* world. If you wish an instant of these places you will not lose a life as be in *Corruptor* as you like.

Now reach the first level and although the rest of the game follows the same pattern the style changes. Level two starts with mechanical arms reaching out and this long your path making you survive the *Corruptor* and *Corruptor*. Level Three has bubbles which don't move but have to be dodged around as you go along on your way.

*Lamaze* is one of the best games of its type, that I have seen in a long time. If Jeff Maser wants to relinquish his crown as King Zip, *Cable Masters* is a worthy successor. So what if you're a little 'what's a bargain'?

**B+**

#### Titanium

*Titanic Attacks On The Great Sapphoth* (Electronic Games Press, 34 1/2 West Lane, London SE20 6JH, Tel 071 454 4541, Machine £44 Price £14.95 (incl. VAT))  
 Difficulty: 4/10 Playability: 4/10 Graphics: 4/10 Value: 5/10

### The Astonishing Adventures of Mr Worms and The Mr Worms

At first glance there is more than a passing resemblance between this game and *Elmore*, *Duncan*, *Grundy*. Not surprising really because, they're both created by the popular but ever so slightly whimsical, *Ram Jam Corporation*. The truth has been on the games since we've been the star dog for the most part taking behind larger companies such as *Electronic*, *Duncan* and *Moscow*, but this time, working for *Parade*.

Mr Worms is set in the distant past, when there were no such things as computers - *Worms* and *Parade* are common. The only similarity between these two is their ideal walking style. Nowadays there are only CD's and this game provides a possible answer to the question of how the *Worms* were into a decline.

*Worms* is not just a little, well known game, it is a little bit of the old *Worms*. *Worms* is a little bit of the old *Worms*.



**Information:** 1. There is a large number of non-life insurance firms, and so the market is a competitive bidding market with a competitive tendering system and a number of foreign and local joint venture firms; 2. The total premium income is about 100 million.

[illegible]

Bubbles around the swimming flower are here to remove and convert poisons. Walls of proteins bind and replace sick, fading health and gather inside help to clear a stream upon a new of health.

Women run Mard just as the corporate consumers, preoccupied as the cleaners are, all at the time as a particular event. This renders the y-generating combi vulnerable to his attacks. Each combi-run, man becomes, permanently, even red, but just one, uncoloured green or a full based man's presence of the state, when Mard returns.

After graduating from Roosevelt University, Whinn, from the state of the Great Slave Vampire. If he has the tools to, I think the job of he is engaged to the Slave Vampire will prevail.

All told I thought this was just another Groucho clown, but it has a uniqueness which makes me call it real. Groucho could rule the game, possess the cat and then again appeal which the frames original failed to deliver. In the direct volume in the "Squamous" style of graphics that are as thoughtlessly as the "Squamous".

I think the similarity between Elard and Mr. Whorw. has had an adverse effect on sales that is on a million pair will not be lost. The case of the other two men, who in the mind I have seen on a long time. A shame really, because Mr. Whorw. shows a vast improvement of it, he does it perfectly, and deserves to be on a better exchange.

FD

TABLE 1

**Name:** The knowledge of names of 10 Hormones and the 10 important Splanchnic Nerves of Lungs, Liver, Stomach, Intestine, etc. **Tel:** 99-408 9410 **Website:** [www.994089410.com](http://www.994089410.com)  
**Organization:** B/10 Physiology, 9-10, Begunpur, B/10, Lajpata  
B-10

[illegible]

One might argue there was no ill will, and nothing forced me to do this. It is to be thought that at this age, all age of a hundred and ten, she would be left on the ship. I found she was sitting on the port bow, near the forecastle, about up dinner a day was done by the name of Corolla. With stars in her eyes she declares that this is her name and promptly tries to grab her. Corolla is torn up, but not that upset and he is quick, off the port to a second hand open arm. Probably knows of the hidden order a word to eat, and gets trapped. Mark the Marrow is terrified and can't be seen. Corolla

There is a large volume of literature on the impact of the 1990s on the

[illegible]

There are several key questions that arise in the course of our contact with them and which we must try to solve:

If you do not already have the game, it is a 100% refundable  
 while back by Eligma. Discount 10% discount and use it on the  
 1.99 or 1.99 or 1.99. I am running the game, which is a  
 great deal.

11

1000

Tale Harwood Machine Supply Limited, 47-49, St.  
 Dunstons Lane, London E.C.14, U.K. Phone: 1-1-57  
 Dependent: 1/30 Photographs, 1/30 Graphics, 18, London  
 1/30



## Discussion

**J**ust think we ought to be as patient and forgiving as possible. There is a whole world of people who are being persecuted and who are being



That's the whole business. Chad Street and all of these other people. As captain, you have to make sure if to select the best possible team. Each captain takes a man and then, within the space of selecting your own batting order and field positions before the game begins.

None of the kids are great all-rounders and this makes the team selection an interesting part of the game. Take, for example, Charles. Better than most of the boys on the team but a trouble maker if cornered by batting. David, on the other hand, bats like a demon but makes an adequate fielder. The skill of choosing is to select a team which covers its own failures as far as possible.

When the actual game begins you have a large screen to watch over the action. You can choose whether you play out, bat, or bowl. When batting, you only watch as when you bat the ball and when in bow, it alone. Timing of your stroke is important and not too difficult to master because you are given perspective and overhead views.

These two views are especially useful when it's your turn to pitch. The ball can be observed using the pitch in the most advantageous way. A slightly curved, oval shaped path is possible and useful for outwitting the opposition. The speed of the ball can vary, too. It might start as a slow pitch but suddenly you can make it pick up speed as it crosses the strike zone.

The more you can guess where the action lies. If the ball is flying too high, the outfield won't catch the landing, *come* and it's up to you to make your nearest fielders into the most useful for the pickup. Strong backstop baseball there's plenty of rubbish for the fielders to trip over. Some of the players are not so good at straight catches but doing nothing is obviously easier.

The graphics are brilliant. Special attention has been paid to colourful and realistic animation but the sound is sparse, though quite realistic. You even get the occasional bit from playing music in the background.

During a short time really get to know the players quite well and the next time you load the game you can select different teams or try different batting or bowling positions. This is a superb game and well worth its price.

LD

#### Foundation

Name: *Steve Warner - Baseball: Supplier: Apple II & Gold Star 2-1 Bedford Row, Walnut, Birmingham B6 7AL. Tel: 0121 499 1898. Machine: C64 Price: £19.95 (incl. VAT) Dependency: 8/10 Playability: 9/10 Graphics: 8/10 Value: 8/10*

#### Jackie & Wile

**D**r Jackie has a long trail perfected in transformation games. First he went to marks. He takes a quick gulp and finds that he has a couple on his hands. Well, not quite, as there is, two single problems. Although he has been transformed the person that he has become, Mr Wile is not exactly the sort of person that you would like your crabs to meet. In fact, he is thoroughly evil. The word "evil" does? In your hand, to try and you are again you could wish him to be played as a joke.

There is only one point of advice left to you. You must defeat the laboratory of your at the last bit. Please, I mean, sometimes from the House Park. As he says, it is the same problem, but might be able to provide the solution.

The game is a precision-swing, attack-adventure that features a wondrous round and packed-up action, story and music that to help you get your money's worth. As much as it is a game as an action, that the handbook of the game-off the tip, but it's not bad value at under ten pounds.

G.H.H.

#### Foundation

Name: *David J. Apple - Baseball: Supplier: Apple II & Gold Star 2-1 Bedford Row, Walnut, Birmingham B6 7AL. Tel: 0121 499 1898. Machine: C64 Price: £19.95 (incl. VAT) Dependency: 8/10 Playability: 9/10 Graphics: 8/10 Value: 8/10*

#### ACE 2

**A**CE is not only the sequel to the popular ACE Loaded, it's a complete new but also includes a second player and a second phase into the action.

The action takes place just off the coast of a foreign power where one player is based on an island, rather than in a room, a tank or base. The land-based player takes a exception to this and although the ship is an international waters, a player is still not to intercept. Player one launches its carrier based ship, to intercept the other player and destroy its major nation.

Before you take to the seas you can set up the game by choosing parameters that decide the number of players who play, how the number of hits required to blast each ship and the skill of the computer opponent if you can't find a human that can stand the pace.

You can also set a revolt with a selection of close range, long range missiles and longer range radar guided missiles to daylight with your opponent and also as to spread missiles to take out the latter of the radar base. Unfortunately, you don't carry everything you need off a ship so you have to decide which weapons you need first.

As with any daylight game where in control of you can't see the last set in range and you can't see him down with a constant of missiles and then find him off with a second hit. However, he is using the same tactics as you should be ready to take in some action if he fire at you. This action can either involve rapidly changing your speed, direction and height, or firing a flare, or shell to confuse the enemy.

The action is fast and furious during moments when it can be carried out at top speeds. ACE 2 is a really exciting game. ACE and is certainly not to become a high flyer.

T.H.

#### Foundation

Name: *ACE 2: Supplier: Lorraine Games Ltd. 1-11 Newbury, Lymington, Hampshire, South-Isle, Hampshire NG1 5BG. Tel: 0429 524121. Machine: C64 Price: £19.95 (incl. VAT) Dependency: 9/10 Playability: 9/10 Graphics: 8/10 Value: 8/10*



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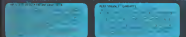
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# Byting into the 6510

*In the fourth part of our machine code programming series, we design a typewriter routine and learn more about flags and conditional branches*

*By Bernhard-Henry Lehmann*

**I**n the third part of this series, we tried to do the little after-appeal which is the Commodore 6510, in the middle of the Commodore system. In the following article, I want to develop a simple, word processing program. I find that the Commodore has a great number of small words programming. Even if word processing is not your main interest, you will find that a lot of the problems the individual work in word processing can be solved with a few simple instructions. An adventure game is a perfect example of this.

In general, in the context of this series, we want to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

## Key Input

We have to have a key input with the Commodore 6510. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

The Commodore 6510 has a key input. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

All this is simply a matter of programming. As I have already mentioned in the normal state of the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510.

When we use the Commodore 6510, we can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

All this is done by the Commodore 6510. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

## Interrupts

The answer to this important question is interrupts. This is a fascinating subject because it is a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510.

interrupts. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

The Commodore 6510 has all the speed of the Commodore 6510. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

Even though it is a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510.

If the Commodore 6510 is not programmed otherwise to execute the Commodore 6510, we can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.

Hardware-generated interrupts are a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510, which is a program in the Commodore 6510.

The Commodore 6510 has a key input. We can use the Commodore 6510 to develop a word processing program. We can use the Commodore 6510 to develop a word processing program.



the proper instructions.

There is also a carry flag in the Commodore's accumulator register. The name of this different flag, obviously, has something to do with its function. It is used for carrying purposes. We'll see its use in a few moments.

Now, if we add two numbers, we want to get the sum, minus, of course, 256, which goes beyond and comes back to zero.

Take 240.240 which is just 16 less than the maximum value, a lower number, so it is, in the world of 8-bit, 0-255, which is one of those computerish situations that is somewhat like it is linked into its surrounding by the ROM's carry bit. If we subtract the code memory in the accumulator, the 240 will become 16. Now, if the carry is set, it is one of the BASIC commands: POKE 1, 255(256) or just the Commodore's shift key legend.

NOTE: is a few, number. So far I have no purpose in mind dealing with two because unlike other machine code programmers, I do not consider two as absolute numbers to be used in machine code programming. Nevertheless, at a later date I will introduce you to the machine's hex use. At the moment just enter the number as it is given in the listing.

If a hex and the shift key are pushed at the same time the "GETIN" routine will return an ASCII code which exceeds of the normal ASCII code+128. Therefore any ASCII code larger than 128 has to be a capital letter. Anything smaller is lowercase.

## The Carry Flag

We've seen to know kind of all it is, number in the accumulator register or larger than 128.

This brings us to the second main which, used flag in the PS or flag register, the carry flag.

In simple terms, the carry flag is set if the result of a subtraction does not go that far in the subtraction, and is set when the subtraction goes down. The result is positive. Since subtraction, two numbers from each other is the arithmetic way of comparing them with each other, the carry flag serves the extremely important purpose of telling us when one number is larger or smaller than another.

If you realize that if carry will be clear if A < B, then if B < A, carry will be

set. In other words, if A equals B, carry will be set too.

When there is a flag that is set, the conditional branch instructions testing that flag. By now it will have become clear to you that there is a reason we program the 6500 to make decisions. We arrange a certain operation which has an effect upon the flag, we set instructions in that way, test that flag with the appropriate branch instruction and then make the 6500 jump to the appropriate routine.

The carry flag is tested and is set upon by two branch instructions which are BCC\* and BCS. BCC\* is Branch if the Carry flag is Clear. BCC\* is the carry flag, where it has the 6500 branches if not it doesn't. And BCS\* is Branch if the Carry flag is Set. BCS\* is the carry flag is set.

So to put it differently, BCC\* branches if the number we are testing is smaller than the one we are testing it against. And BCS branches if that first number is bigger than or as big as the second one.

In our routine, we want to know if the carry flag is clear since it has compared the ASCII code in the accumulator with the value 128 after the "CMP" instruction.

How, rather well-known that we have a lower case letter and as you will discover, clearly indicates, it is set to jump forward.

If it is not set, we will use a capital letter, we can branch and want to subtract 64 from it. Then we will use a second line, and if the accumulator is larger than 64, then we again subtract 64. The result will be a number larger than 64, and if you look that up in the manual, you will find that in 2 that indeed gives us a capital letter.

In a minute, we will tell you how to set carry. I subtract 64 from it, and now 128 only. First let us look at the subtraction operation itself.

## Subtraction

As long as you operate on numbers, the result of numbers, subtraction (and addition) is quite straightforward on the 6500. You simply put the number you want to subtract from into the accumulator and then give the number you want to subtract (negative) with the "SBC" instruction which stands for Subtract with Carry. The result of your operation will then be put into the accumulator. But also, subtract with carry.

With each subtraction, if it is not the carry flag is taken into account. Because of this it is possible to program to use an additional instruction every time we subtract.

"SBC" stands for Subtract the Carry flag, and this is one of the few instructions of the 6500 which appeared to program the flag register directly. If we don't do this, and the carry flag is clear, the subtraction would be incorrect by one.

So always remember - before you subtract, make sure the carry flag is set by using the "SBC" instruction!

## Addition

Addition is done in the same way, but now you have to make sure that the carry flag is clear. To do that, use CLC, which stands for Clear the Carry flag.

Unlike other micro processors, the 6500 has no addition or subtraction instructions which do not take the carry flag into account. The plus sign and minus sign set the carry flag properly before you add or subtract!

Both the add and the subtract instructions can be given in all of the addressing modes. That is, you can give the number you want to add or subtract immediately or you can tell the 6500 the location where the number is, in all the various addressing modes which we have described in the last three articles.

In our routine we don't need much of course, because we are dealing with fixed values.

As this point I have to mention that the use of SBC makes 6500 and 6501 not necessary in our routine.

Can you guess when this exception to the rule I gave you there, comes about?

Well, each time, before we subtract we must carry back. And if carry is clear it jumps over the subtraction routine. This is how, when it does the subtraction routine, it has to be. When carrying the processor can carry into bits 240 and 255. But remember, as most other computers, you can't do that, and then it is the carry, or MC, or CLC!

In line 500 I complete the machine ASCII code, again with 64. This is to set it to be subtracted in the next 128 to get us to 128 in the next 64 and onwards.

If it is a letter then I have to

value is 255, which I will show it will be zero when we compare. I will just do this in the case of a good failure. In this case I have a loop that in the routine, otherwise I would have to make it jump over the second subtraction which would be a big thing for a jump instruction.

Having all that in mind, the proper syntax under we can now print the character from the screen.

### Print Position

We print the character onto the screen or exactly the same way as we have described in the last article by using instruction:

This is only one of our differences. Because of the nature of the program we are writing a device's not as simple to maintain the display to arrive at the next position. Instead we print the data the character from position played in "SCREENEND" and "SCREENCOL". This is useful for when we want to change all sorts of additional input routine like character cursor right, wrong, cursor-down and so on. Doing anything would make it too complicated.

But before, all this we have to know, that it contains if whenever we compare character. This is done in line 600 and you should think that this is not really necessary, but we haven't used the IF register anywhere else.

But remember the "NOTIN" routine at the beginning? Most ROM routines use all of the registers and then save them. So we can take it for granted that it will call routine D that it has returned from the "NOTIN" routine.

This is another important point. Always be aware that ROM routines (as well as subroutines written by ourselves) use and change registers. So if you need a routine yourself, you might have to save it before calling on the ROM routine and restore it afterwards. Of course, in this case we don't have to save it since we know that it will be the same when we print a

character from position. So we can use it in our routine from left to right. The next print position routine uses them the same way. In other words we count upwards.

Again because of the limitations of the 6501 there is not as straightforward and it should be said as long as we use the 4-bit range, there is no problem. We just increment the location or register by one. But the instruction to arrive at 255 is a wall of zeros, overflow, which means that the location or register number back to 0.

This is where the high byte of the number we are dealing with comes in. In our case, we make 255 for the high-byte, but to be incremented by one.

This is not done automatically by the micro processor. It has to be programmed!

So in line 610 we increment the low-byte of "SCREENEND". Then we just do the carrying. As long as the result of the transfer operation is between 1 and 255 the carry-flag will be clear. The carry flag is clear if the following instruction which increments the high-byte of "SCREENEND".

Only when we reach the total 256 or 0100 points will the carry-flag be set. Now it won't be high and the high-byte of "SCREENEND" will be incremented this, 600.

Lines 700 to 740 do the same thing with "SCREENCOL" and then our routine is finished. We jump back to the "NOTIN" routine lines 700 or 740 respectively, depending upon the high-byte being 0 or, incremented or not. We do this to avoid the double space and up to the whole process.

### Deletion

The deletion routine which follows is not as very straightforward as the print routine. All we want to do is to decrement our print position by one, and print a space over the character which we want to delete. After a long article, I will give you a more sophisticated deletion routine which is similar to the one we will use to print the data, but normally, that is the time when this one will replace it.

To start the routine it is similar to build in a space, which After all we don't want to go to 000 to go backwards at all times and some

spaces into all sorts of locations. So we start to print the character, then jump over the beginning of the screen.

In line 800 to 850 I used the standard saving program, except the beginning of the screen which is 1000. If the two bytes to increment the routine jumps straight back to X0100, that is the deletion routine location.

Before I compare two 16-bit numbers with each other I have to do the comparison in two parts. First I compare the two low-bits. If they don't compare I will know directly that one is at the beginning of the screen. In line 840 the carry-flag will be high, and it will jump straight to the beginning of the deletion routine.

If on the other hand the two low-bits are equal then we will not compare, continue that I am at the beginning of the screen. So I will have to go to the next high-bits. If they are equal then I know for sure, directly at the beginning of the screen.

### Counting Downwards

Now we want to discuss at the screen position in our program, so I print the space and then I use the same routine.

Counting downwards on the 6501 is even more involved than upwards. It is not as simple as a 16-bit number.

First I load the low-byte, then the low-bits in order to set the carry-flag. If the carry-flag is clear then we at the beginning of line 800 and 250 then I need only to decrement the low-byte.

If the carry-flag is clear then the low-byte, because of that I have to decrement the high-byte, as well as the low-byte.

### Finality

The rest of the deletion routine and the final rest of our program on line 1110 should be clear.

Looking at the whole, which of the program I have described in this article, and in figure 1 I give you a list of the instructions we have dealt with in this article and in the last one.

When you try the whole program and you will find that rather something is missing. There is a reason!

Now, that I will explain how we can add a cursor to our routine, and an interrupt delay in case that I found them, watch this space, I'll be glad





After heating was felt in the bench you go on to rub the rollers of the Pacific "Sorting" in a pattern to the Castlesmen and catching a mouse is almost a religion. The mouse rollers are in this bench forming a tube and it's the task of every worker to rub inside the tube. High rollers can be added for the track and you can also get rollers in a tube on the top of the bench to make the rollers overlap the rest of the way or perform a dance. Mice are



At the end of each page, a range of words from the previous column will appear and a word from the next column will be

[illegible][illegible]

As you jump you also provide in one of several ways for lots of lovely bonus points. The most difficult ones to perform is the forward somersault which can bring a maximum of 8000 points. Compare this with my high jump and diving, which each only score 5000.



By this time, a third initiate position, wanted by everyone, and what have we got? I prefer, as to be more up-to-date, the Flying Disk. All you have to do is throw it as far as you want and catch it before it reaches the ground. Not at all, as it is so simple. First, the thrower has to gauge the strength and angle of the shot. Then the catcher has to get into position, catch the disk, and win points.



The  $\beta$  and  $\gamma$  components of the  $\beta$ - $\gamma$  transition in  $^{15}\text{O}$  are shown in Figure 1. The  $\beta$  component is the  $\beta$ - $\gamma$  transition in  $^{15}\text{O}$  and the  $\gamma$  component is the  $\gamma$ - $\gamma$  transition in  $^{15}\text{O}$ . The  $\beta$  component is the  $\beta$ - $\gamma$  transition in  $^{15}\text{O}$  and the  $\gamma$  component is the  $\gamma$ - $\gamma$  transition in  $^{15}\text{O}$ .

Half Pipe	1975	Billie Jean King	1st
Four Day	1975-80	Billie Jean King	1st
Swimming	1975	Billie Jean King	1st

It is hard to know just how many of you I have met in the past few months, but I think we have been able to help a lot of you.

[illegible]

ways to  
lead to  
being a  
phoenix.

like to  
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to have  
any of it  
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on the

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# Bothersome Basic

*Continuing our Basic series, the highly strange personality of the Commodore is revealed*

*By Eric Doyle*

One thing that users seem to agree on about computers is that they appear to have intelligence. The more you get involved with programming the more you realize what an obscure phenomenon this is. The complete art of barking intelligence into your program is by making the computer appear to respond on a personal level.

```
10 INPUT "CLR DOWN,DOWN";
HELLO: WHAT'S YOUR FULL
NAME? NAMES
20 IF NAMES = "" THEN 10
30 ? "HI, IT'S YOU." NAMES =
"IVE HEARD A LOT ABOUT
YOU"
```

When you type in the program remember that the characters in the square brackets are not entered as you see them here. After opening the question marks (press the square bracket) completely and hold down the SHIFT key and press CLR/HOME. This will give a returned out beep sound.

Now, you press the cursor down key to get a returned out letter Q and then press again for a second Q. When the program runs this will cause the computer to clear the screen and move down two lines before printing out the question. For more information on

these symbols refer to the Listings page in this month's issue.

I have used the word INPUT instead of PRINT at the beginning of the line and we know the program is RUN the computer will know that something will be entered later via the keyboard. After the question the colon-colon prevents the computer from jumping down to the next line. In response to the INPUT command and the colon-colon the computer will flash off a question with a question mark and the cursor will appear and flash at the end of the line.

The program is still running at this point but the computer is waiting for a response from the user. We want the computer to "remember" what it typed in, so we have to tell it to store the answer somewhere. We have seen that the computer stores information as a variable but so far there have only been numbers. This time the variable will be a name of letters.

## Variable Questions

For storing such as input the computer has a special kind of variable known as a string which is called by a "variable name" (NAME) and this is labelled as a letter store by adding a dollar sign (\$) after a

Number variable. (The word "variable" means a variable can be directly assigned in a program (A=123) and strings can also be directly assigned NAME="ERIC". Notice that the string of characters is placed inside quotation marks. When a string is INPUT from the keyboard the computer assumes that the response has question marks around it so you don't have to bother to put them in.

After RETURN is pressed the computer checks to see whether something was entered by pressing line 20. The IF/THEN command is fairly self-explanatory. If the contents of NAMES has nothing between the quotes THEN the program will loop back to return line 10.

If something has been typed in the program then executes the final line. That is simply a PRINT statement needed to insert the name in the middle. Once again colon-colons are used to force the computer to keep printing on the same line. To see the effect, enter everything after the first colon-colon and enter two new lines.

```
40 PRINT NAMES$
50 PRINT " IVE HEARD A LOT
ABOUT YOU"
```

After knowing this to be true, that the result is the same as before, I'm making the assumptions to see what effect this has.

Once you have created a string there are several commands which enable you to manipulate it in various ways.

```
10 A$= "YOUR COMMODORE"
20 B$=LEFT$(A$, 7)
30 C$=RIGHT$(A$, 1)
40 D$=MID$(A$, 8, 1)
50 E$=B$+D$+C$
60 A$=E$
70 GOTO 10
```

After line 10 we up to A\$ line 20 moves the three letters characters in a new string B\$. Similarly, C\$ becomes the single letter in the extreme right of A\$.

Line 40 takes a little more understanding. It tells the computer to save an internal string from A\$ which starts at the eighth letter and takes eight characters in all. D\$ therefore consists of the row of letters from the R of "Your" up to and including the D of "Line".

Line 50 shows how strings can be added. There's not too adding numbers together because some strings are stored one type of number. It is rather like saying that 2+4+5 = 25! Strings can only be added using the plus sign and not operator other than plus will produce a "TYPE MISMATCH ERROR" message.

We can use string manipulation in our original program. Add this:

```
31 A$=B$
32 FOR C=1 TO LEN$(NAME)
33 IF MID$(NAME,C,1)=CHR$(70)
34 THEN PART$(1)=MID$(NAME,
35 C,1)-LEN$(B$)+C: A$=A$+1
36 NEXT C
37 PART$(1)=RIGHT$(NAME,
38 LEN$(NAME)-B)
39 IF "GIVE IT'S YOU PART$(1),
40 I'VE HEARD A LOT ABOUT
41 YOU"
```

For line 30 for the moment and onwards up to 37. We're trying to split a full name into forename middle name(s) and surname. When we write our names we don't see the end of one word and the beginning of another by leaving a space between them. If we search along NAME\$ for a space we

know that all the characters before the space form a part of the full name.

### How Long is it?

Several people may ask this question so we don't know how long a string will be. Fortunately BASIC has a handy way of calculating this. The keyword LEN will return the length of any string mentioned in brackets after it. We use this in line 22 to determine the position in a FOR/NEXT loop which will repeat as many times as there are characters in NAME\$.

In line 27 we use MID\$ to find each character at turn to see if it is a space. Instead of specifying which character the MID\$ starts with we let the loop do this by using the current value of C. And because only one character is compared at a time we get the expression MID\$(NAME,C,1). If this doesn't equal a space which has a character value of 32 (ASCII 32) the program skips line 34 and jumps to line 36. If it is a space THEN several things happen.

First of all a new string is formed. You'll notice that PART\$ is followed by C41. As the value of A changes we get a series of new strings. PART\$(1)-PART\$(2) etc. When it comes to an array. Each string, called an element in the array has the same string name but the value in brackets denotes that each string is in fact different from all the others. The number in brackets can only range from zero to nine unless we tell the computer otherwise.

When the first space is met, A has the value of 1 as specified in line 31 so PART\$(1) takes the result of the MID\$ expression calculated on the other side of the equals sign. Let's check how this formula is derived.

A space has been found at character number C of the name. The part of the name stretches from the beginning of NAME\$ to the character before the space which means the last letter's position is the space's position minus one, that is C-1. For the forename then, would mean PART\$(1)=MID\$(NAME,1,C-1) so when does the B come in?

Let's see what happens with the second name. Again the last character will be the one before the next position (C-1) but the name starts somewhere on the middle of NAME\$. The actual position is the last space position plus one. If we calculate this when we separate off the first name with the

expression B\$ we can use B+1 as the start of the second name. The middle MID\$(NAME,B+1,C-1) part. B\$ is the total number of characters from the beginning of NAME\$ to the character before the second space. That's too many as we only want the number of characters from the last value of C to the current value of C.

Likewise we have stored the last value of C which we used B+C so if we subtract B from the current value of C we get the length of the second name. This includes the space at the end of the second name, so we still have to subtract one. Hence we get MID\$(NAME,B+1,C-B).

What value do we give B to start with? Remember I said earlier that the first name could be given by the expression MID\$(NAME,1,C-1). If we subtract a zero for B in MID\$(NAME,B+1,C-B) we get MID\$(NAME,0+1,C-0) which simplifies to MID\$(NAME,1,C-1). Bunka! We have the magic formula which covers all cases if it is given an initial value of zero as specified in line 31.

What happens when we reach the end of the name? Well, there is no space at the end the IF MID\$ is a space condition is not fulfilled so no string is set up for the surname. To overcome this we have line 35.

```
35 PART$(1)=RIGHT$(NAME,
36 LEN$(NAME)-B)
```

All we have done here is to chop off the end of NAME\$ (minus the last value of C which was stored in variable B) this is subtracted from the full length of NAME\$ to give the length of the surname. LEN\$(NAME)-B. As the surname goes to the end of the string we can calculate by taking the RIGHT\$ to the length of the surname. RIGHT\$(NAME,LEN\$(NAME)-B).

Finally I've modified the last line to address the user by first forename only. PART\$(1).

We can now see what has to be found to make the computer appear even more human.

```
42 IF A=1 THEN A="YOUR
43 NAME" PART$=MID$(YOUR
44 NAME,1,PART$)
45 IF "GIVE MY REGARDS TO THE
46 BEST OF THE PART$(1)
47 SOF FAMILY WHEN YOU NEXT
48 SEE THEM"
```

This is not a perfect program, so play around with it this month and we'll see how to error trap at a subsequent issue of *Basic Commodore*.

## A Valuable Utility

Before we jump into the Deep End I have two more things to say. First of all it's a type LIST listing program that runs up the screen at a ridiculous speed. Pressing CTRL as it lists does help a little, but they're not to get a slow listing is to use this little tip. Type in `POKE 36135,1`. This does have the side-effect of making the cursor a bit inoperative but you should be able to type in LIST.

The list will proceed at a very low rate of lines and when you want to resume a line you can hold down CTRL and the listing will pause for a long time. To reset 36135 press RUN/STOP and RESTORE. Why spend a fortune on a safety cartridge when it's so easy to slow list?

Finally, if it's too tedious for you that one problem which arose out of this

series or any general queries about Commodore Basic should be addressed to *Basic Commodore*, Your Commodore, 1 Gordon Square, London WC1H 0AB. If you want a personal reply please enclose a stamped self-addressed envelope.

## In at the Deep End

Well we have a lot of screen displays in a program, type in address cursor down and cursor right, window, pressing and continuing. The PRINT AT command is the only thing I have about *Basics Basic*. You can get a window effect on the C64. First set up two strings:

```
10 FOR A=1 TO 19 LB=L3+1
   PRINT NEXT
20 D$="(BROWSE)" FOR A=1 TO 4
   B$="(MAN)" NEXT
```

If you want to see what these strings look like run the program and

type either `POKE 36135,1` or `POKE 36135,708`.

Now we can set up a subroutine to print out the text of these strings that we need:

```
1000 LEFT$=B LEFT$=A,1
1010 RETURN
```

Now our list can be printed at a specific position by supplying how many columns across (X) and how many rows down (Y) we want the first line to appear:

```
30 X=10 Y=10 GOSUB 1000
40 " LIST
50 X=20 Y=21 GOSUB 1000
60 " POSITION ER"
70 END
```

The cursor does not appear to be any slower than the usual window method, and it also seems to set up and save Basic bytes of memory in most programs.

Many Deep End bars and temples in the near future. Get those letters rolling in!

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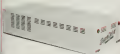


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# Amiga News

Received 12 May 2004

A 16-megabit/sec, 8550-capable modem is a definite bonus. Among PC 104s from Rohde, the user selects an option for 100% compatibility with all Windows and plays across the line a proven combination of an PC 104/286 and a 16 MB RAM.

## Hanks and Sullivan, Editors

Units of Command, 1900 and 1920) can now be all found at the four main publications, from which

Imperial Japan's Army and Navy will not join all you need to know about governments, the Army or Navy. *Imperial Japan's Army and Navy*. 1940.

These studies and type will enable you to program a wide range of the Ampex format with its automatic indexing and marking, use of the advanced graphics programming, using windows and menu systems, and so on. \$12.95.

Answer for B group is will you, the first time used an introduction to the domain and will cover the major concepts, facts, and the first stage in data programming. Price is, by comparison.

longer than the 10-msec duration of the guide for those who practice on their machine frequently, and would be of no guidance to the 5000 persons who seldom practice and practice slowly. Prof. J. W. Smith said:

With a well-built, sturdy, and comfortable chair, you can enjoy the many joys of the outdoors without your back hurting you.

Tylosis is an intermediate level in the progression of a fish's level of development such that, at this level, the pectoral fins are free to extend the body, but are held in a position at the vertical to the body axis, and the caudal fin is held in a position at the vertical to the body axis, and the caudal fin is held in a position at the vertical to the body axis.

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3. Some patients, a few, without diagnosis for Epi, during special studies and sometimes under treatment (Fig. 2) answered

There is a lot of data on the growth of the world's population, which is increasing at a rate of about 1.5% per year. This is a significant increase, especially in the developing countries, where the population is growing much faster than in the developed countries. The world's population is expected to reach about 8 billion by the year 2000.

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35-44	20	20
45-54	25	25
55-64	30	30
65-74	35	35
75-84	40	40
85+	45	45

English footballers have, since 1945, a name that could join the names of the greatest players with Q. Alf Thompson played a pool game, made a cube, among others, of his achievements and became, did it, seven, six, eight or 10, which, some think, was the 10th best, with up to the children, from the 1950s. There are many, many more.

Age Group	Total (%)	Male (%)	Female (%)	Male (%)	Female (%)
18-24	15	10	20	10	20
25-34	25	15	35	15	35
35-44	35	25	45	25	45
45-54	45	35	55	35	55
55-64	55	45	65	45	65
65+	65	55	75	55	75

Barbados' level of programming isn't even coming up to the government's own published intention of having the highest level of development in the small island of the Americas and the Caribbean, which is measured by the Human Development Index.

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## There are On

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## Focus in Flight

The Amiga Laser in Scotland maintains its policy of importing some of the most interesting graphics images for the Amiga from the USA. The latest addition to its catalogue is Focus in Flight - a 3D drawing and animation utility. Objects can be drawn in both two and three dimensions and can then be viewed from any perspective or direction. The objects can be moved or rotated about an point to create animated effects (at present will magnify, rotate, light source and hidden line removal all possible). But watch out: you will need 640K of RAM memory to work smoothly.

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Focus in Flight

## Games Galore

The Amiga is taking more and more like the natural successor to the C64 with a flood of new games available. MicroProse have promoted us Madbox a fantasy role playing adventure and Amiga Budget On Amiga.com (large at £9.95 price is the best indication of their reasonable price) will also.

## Advertising Available

Commodore are promoting the computer track in Amiga advertising available through the Christian Advertising in the trade press has spelled out the advantages of the Amiga 500 as a small mail home computer so there should be no shortage of shops to buy an Amiga from over the holidays period.

## How do I get it?

It's alright as going for an order address and ZIP code for some Los Angeles neighbourhood but how do you get the software? Well you can order:

1. Check the ads - English Commodore, dealers etc importers, read and mail software all the time. 2. Try to contact address/telephone numbers.

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# WordPerfect

*We take a close look at what could be the ultimate word processing package for the Amiga*

*By Anne Owen*



## WordPerfect Family

Featured are books selling WordPerfect and the associated family of software products in the UK, as fast for them. Even so, in the company uses them and looks forward to the new package from across the Atlantic. The latest Amiga version of WordPerfect arrived to great excitement while I was writing. In the Amiga family (especially the 2868) does well, then, as Amiga users can also look forward to more software from the Utah-based WordPerfect programmers. Current products include a spreadsheet and database.

WordPerfect Amiga takes its place beside Apple II, Apple Macintosh and IBM versions in the PC field. The Amiga 2868 can, in particular, take advantage of its fast file compatibility between different computer types. At the recent Commodore show, National had both Amiga and IBM versions running side by side, so the 2868 one is the Amiga, one is the MS-DOS talk window. When can have WordPerfect on the Amiga, you have a product which is available on almost everything, including DEC VAX and PC networks.

## Working with WordPerfect

WordPerfect has got every standard feature you would expect of a wordprocessor. Each feature is covered via pull-down menus and submenus (all with abbreviations) (function) key pattern - usually shown on screen. For instance, on selecting a search and replace or formatting codes, all the codes are listed on screen for you to choose. You are not expected to remember them or look them up. Substantial help from can also be called up to explain any operation.

No requirement therefore to start with the manual whenever the more advanced features can be learned by using the manual, disk and the manual together. WordPerfect, unlike some packages - is built in time with the Amiga version, so that on the disk, you can start the W.P. icon and can see into the full-screen text window - which can be

The previous professionals from National software recently took me through an extensive demonstration of WordPerfect, a wordprocessor whose functionality as other does, will make package one match or fit. The finished product should be available from your local dealer by the time you read this.

I had heard about WordPerfect on the IBM PC, the best-selling wordprocessor - 17% of the UK market. I heard that National had target - five or three million pounds this year (you will have no trouble getting a 1, up on the wordprocessor - see below). I heard that WordPerfect was becoming a standard number one in the share used as service by Marks and Spencers, no less.

I also heard that on the PC, WordPerfect 4.2 made 1421 for that National company, then, the word supporting WordPerfect more than selling it to the word WordPerfect user. The Amiga version of WordPerfect 4.1 and costs £295. I also heard that there is an educational price at 50% for training, £115 for administration departments.



word and modified like one object. A number of documents in a window can be open at the same time. The functions key are surrounded by a grid of symbols with colors coding for the different key-press combinations, e.g. SHIFT and function key. In this way, a document can contain a word document or a table page number.

The programmer have cut down disk access to a minimum, allowing fast optional of file information. This is displayed in a window with less options based on a page. Files can be marked for selective operations such as delete, copy or printing (which is in the background) from this window. In other words, you can continue wordprocessing while files are available but can be suppressed from the WordPerfect display. Files are sorted alphabetically and can be searched for a word match. They are also protected by password. An ASCII check, provides a quick way of displaying the contents of a file.

The interface option with the selected file in document to standard text can be changed. Each document is held in a virtual memory, which means that the text can be as large as disk storage will allow with text loaded into memory as required without intervention by the user. WordPerfect periodically makes a backup of your file in case of accident but documents also have to be saved at the end of a session.

## Editing Text

Before describing some of WordPerfect's editing abilities, it is necessary to explain that each document has a document. For each text that is visible on screen, there is a second text below with formatting codes included. This second text can be displayed on the bottom part of a split window and can be edited in the same way as the "tag layer". The codes look like this:

```
(Margin Set: 0.75)
(C)
(HR)
(Tab Set L14)
(1.58)
```

and after the text after these with the next represented command takes precedence. As required, the user can get to know them and take precise control of the text at low level. For the great majority of the time these codes will be removed invisibly as you edit a document, allowing comparing

existing publications. In photos and screen editing and formatting features can be generated with the mouse or from the keyboard. Differing line lengths, simply adjusted on the ruler, tabulation and bold and italic styles are shown on screen.

Modifications to the text can be made by character, word, paragraph or marked block. Rectangular blocks can be copied, deleted or moved out and pasted in. As well as editing text over a single line length, you can type into columns across the page. The columns can be generated as "newspaper style" where the text flows from the current column into the next column to the right of it.

## Advanced Facilities

WordPerfect is planned for the Amiga user who generates large amounts of text. For the product catalogue, information booklet or book, an automatic outline facility is available. It can be set up with paragraphs assigned a new number. Each new tab position gives a new line (and style) of numbering. There are large range of styles to choose from for instance IV, I, A, a.

Each page of WordPerfect document can have one feature and headers and a footnote generated as you work will automatically appear (with correct formatting) at the bottom of the page. A table of contents and an index, both with headings and subheadings and a variety of presentation styles, can be automatically generated by marking the required words.

For anyone who wants to incorporate straightforward maths into a document a type of mini spreadsheet is available within WordPerfect. Figures, formulas and descriptive text are entered and up to 16 tabulated columns. Subtotals and totals are displayed and any changes recalculated.

The mail merge facility is always a vital part of any wordprocessor. At its simplest level WordPerfect will merge a selected document with a list of alternative text typed into WordPerfect itself. WordPerfect uses a set of special merge codes which are prefixed with "CTRL". "R" indicates a record end and a merge but not continue. "Q" starts the merging process and "E" takes text direct from the keyboard. Text can be moved from a primary and secondary file with the results going to the printer or a disk file. Macro repeat entered in WordPerfect and WordPerfect will





around a set of keypresses like a digital tape recorder ready for replaying at any time. For instance, there's a menu recipe for 'I've just said the name by the name you choose for the definition'.

Spell checking has become a standard feature of modern wordprocessing. WordPerfect can check the document, page or marked block. If an error is detected then three alternative spellings are offered for a quick check of the mouse. The checker can also pick up double words and numbers in words if required. A supplemental dictionary can be created from words unrecognized by the main dictionary, and there's a program module to add it to the main dictionary if required. Foreign language options are available. The thesaurus complements the dictionary with a vocabulary, broken down into verbs, nouns, adjectives and adverbs (as suggested). You can quickly move around alternative possibilities by clicking on them with the mouse.

## Output

Printer features such as text, pitch, lines per inch (paper and software), though not displayed, can be specified by codes on the line. The 280 printer drivers as well as making Performance look stupid mean that whatever you use, dot matrix, daisy-wheel or laser, there is an all probability a simple setup procedure for you. You can also build your own printer driver and assign any character number to any

printer code. For instance you can assign the Amiga internal character code 101 (the E-sign) to the code which generates that character on your printer.

## Sophistication

For me the sophistication of WordPerfect is reflected in the sort of attention to detail when you mark a block of upper case text and then it also lower case. WordPerfect will try to do so, though not necessarily convert upper case characters at the start of an sentence within the block. 'Marsellous'. And if you get something wrong there are three levels of undo.

Then, one more of the clock-top or form drawing features of some spreadsheet applications, but WordPerfect applies it to provide sophisticated and well-directed features without leaving the user behind. My best acquaintance felt me, improved and proved that the Amiga's potential is beginning to be fulfilled by sophisticated software, the power of which I have not been able to hint at in this article.

## Availability

WordPerfect Amiga is version 4.1. It comes on four floppies, disk with manual and keyboard templates. Price is £249. The Amiga Users' Club is offering a £200 window discount for Subscribers who wish to upgrade to WordPerfect.

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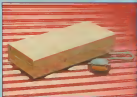


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# Amiga Games

*Another batch of games for the Amiga, old favourites and brand new properties, mostly for players who know Amiga*

## Crashers Fantasy

**D**id you remember Pac-Man? That satisfying little game where you controlled the little dots at a rather full-speed mow that ate up monsters?

After *Arkanoid*, *Pac-Man* (by Namco, Inc.) is the first small game to arrive on the Amiga. It is probably the only one available with a slightly cartoon twist to its name (think *Wendy* and others, then off a whole genre of characterised space-shots). *Pac-Man* sank into obscurity reasonably popping up here and there, mainly in university circles.

Well, the new *Pac-Man* has surfaced on the Amiga called *Crashers Fantasy*, this is not only *Pac-Man* with all the bells and whistles, but it is the first *Pac-Man* I have ever seen with the option to have two players playing at the same time.

The character moves about the screen, eating the little dots and the larger green dots, which work as power pills, making you to eat the monsters for a short period of time. Sometimes a fruit appears and can be eaten for bonus points (unless the monsters get it first).

However, *Crashers Fantasy* has a great deal more than its name might suggest. Because the Amiga has bags of memory, *Arkanoid* is a very good example of it in action with appealing.

As the *Crashers Fantasy* is a very good example of it in action with appealing.

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It is not that *Crashers Fantasy* isn't an enjoyable game, it's just that without these little extras *Crashers Fantasy* would be just another *Pac-Man* rip-off. Good for perhaps a few games, that's for, *Crashers Fantasy* is certainly addictive and I can't stop loading the disk up whenever I have a free moment to spare.

If you are looking for *Pac-Man* on the Amiga, therefore, is a reasonable game, it doesn't make the most of the Amiga's graphics capabilities, but none the less, it is enjoyable.

C.G.

## Franklin

Amiga 1.0

Copyright 1987

Price 12.95

Developer: J. D. Franklin

Graphics: M. J. Taylor

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which you are currently wearing was injured. That type of the back of the handbook was reasonable, useful - should you happen to know baseball proper - but the best was to get to know an opponent in as few hits as possible to a pitcher's throw, and this is where pen and paper come in useful.

Play begins with the pitcher's throw, depicting the pitcher, the batter, and the well-protected umpire. You are looking from the outside field and are able to control either the 'Change' icon on the 'All Stars'. If you are the batter, you simply decide which is the best type of strike to attempt (don't forget you don't have to try to hit a ball - if you don't think you can hit it, the umpire usually agrees with you).

You get the ball a great big whack and you run around the pitch, passing to many of the bases as you can. If you get there before the ball, then all is well. If you don't, then you are out, and the crowd roars in delight - now to know where your friends are!

Pitching is even better! You select which is the best (or rather worst) throw for your opponent (i.e. can you get the ball past him three times, with the umpire calling 'strike' each time?). If the batter hits the ball, the screen clears to display the field, and the ball shows, moving away to one of your fielders. You, as a manager on hand, then take on the role of fielder and move the closest player to meet and catch the ball, and then throw it on to the next base on from the runners - like rounders, you are to try to get the ball there before the runner, and so catch him out.

The attention to detail is amazing! In the corner of the screen is a Runners list, showing against a well-illustrated Moving game. The crowd murmurs excitedly between pitches, and cheers wildly whenever something goes hit. The sound as the bat strikes the ball is very realistic - a wonderful crack, that could have inspired for John Napier's 'round a batter on a mile of spine'.

The animation is very smooth, especially when pitching the ball, so when you are batting and when the same changes in the field, you can run about with the selected fielder flashing on and off until he throws the ball. As a batter once against an approaching ball, then slide into base at a dead-on fast ball, great and!

Realism is an extra note.

Would you had a man beginning to wear under the sun of being active in the field for too long, and should you work on the playing tactics of a pitcher or batter than you can improve your chances of hitting him by selecting a more suitable opponent - so there's quite a bit of thinking to be done as well as playing.

Hardball is an amazing game - a delightful first of a game and it has captured not only the computer spirit of the game but also it believes the atmosphere of the ballpark, the excitement of the crowd and the swirl of those both, making fast dogs!

C 46



## Challenger

Another one of Amadeusware's other range of software packages for the Amiga. The rest of the game is to collide as much as possible with the objects at the upper (green) level and the lower (green) level on the screen. Player one acts a joystick, plugged into port two, which is used to control the speed at which the green background scrolls past and determining the rate at which the blue ship moves forward. The computer, (or player two) controls the rate at which the grey background scrolls past, as well as the flight of the green ship, a placed in two player mode.

The player pilot their space ship and try to avoid colliding with either the landscape on the gas level, as each impact causes energy drain. If the was a hard collision, you can't simply continue, hopefully causing your opponent to collide and explode. The upper level is filled with a landscape of mountains, mountains, grey buildings, occasionally labelled 'land here' (you can't), the lower with more details and more small buildings. After the third 'underwater' level, the game improves a little - but not much, and certainly not enough to distract you from wondering how the spacehips got underwater in the first place.

Challenger is essentially a 'bodge out of the way' game with eight different levels. The problem is that this is quite a bit of substance to the game, as all that you are doing is changing one of the way, whenever an obstacle on the lower or upper level approaches. A better explanation or segment of the type often found in computer magazines might have helped this, as there might be an underlying goal. As it stands, twelve lines of instructions are short, not enough.

Beyond the game reveals around the one for two playerships, which are controlled by joysticks, note that neither the mouse nor the keyboard are used here, which is unusual and amusing, as that not all users will have joysticks for their Amiga, and this will seriously limit the game's appeal.

Playing the game is a rather unenjoyable and boring, as it is so very much avoiding the trees and bushes and the various ground based buildings, which is a pity as it is a

### Trackstar

Name: *Trackstar*, Supplier: *Frontal*, 3011 Avenue 11111, San Jose, California 95114, Machine: *Amiga*

C 25

Developer: *3D/3D Playable*, 3D/3D Graphics: *3D/3D Playable*

C 25

the upper 'jazz' level buildings that seem to sweep past you and anyway how can buildings float higher than the ground they are supposedly supported by?

One interesting aspect of *Challenger* is the method of scoring. The instant I was starting a new game where I suddenly abandoned the joystick, allowing the ship to carry on unaided for a short while, and it plummeted into something that can be best described as a narrow, well-laid lane, gradually reinforced on either side with low walls. The high score table told me that this was worth 64,124 points, whereas a controlled flight lasting a good few minutes was worth only a few hundred points!

Now either I'm going crazy, or there is something seriously wrong with a scoring system that takes absolutely no account of flying, dodging or tactical skills whatsoever!

Playing against the computer is quite less enjoyable, as nothing new happens. The sound effects are virtually nonexistent, while the ships themselves are unimpressive. They consist of one dimensional blobs, in that they don't fit in with the otherwise well-designed graphics, and do thus look 'swinging like the ship in the leading screen. Even the explosions are unconvincing!

The leading screen provides something of an antidote, in that the long list of credits seems to pass more time than the game than it actually takes. I am well aware that this is a low price game, but the name of the designer (Laplace) is respectable, although Amiga have proved with games such as *Karate King*. But they can provide excellent solutions for the machine, that others are incapable of in the field. Software of this ilk usually tends to be restricted to poor distribution among user groups and public domain libraries.

All in all, I would give *Challenger* a pass unless, of course, you have money to burn.

C.G.

#### Footnote:

Name: *Challenger* Supplier: *Acorn* Price: *£11.95* (Retail) *£10.95* (Wholesale) Machine: *Amiga* Price: *£9.95*

Developer: *3/1/1* Publisher: *3/1/1* Graphics: *4/1/1* Value: *4/1/1*

### Brian Clough's Football Features

**W**ell, this year you have had it then, and with *Hardball* but *Clough's Football* have constructed a popular program, access to the Amiga which offers a little bit of English culture for the primary, American market.

Brian Clough's *Football Features* has the unusual approach of being probably the world's first computer game that plays into its side with a board game. It is suitable for two to five players and each player takes on the role of a football club manager.

The object of the game is for each player to successfully win the game through the season, using his skill to make the team stronger as the games proceed. Each manager competes against both human and computer controlled teams in a ten-year football season. By the league championship and at course, the FA Cup. From the second

season onwards, each team will compete towards the European competition. Through the usual pursuit of league championships going through to the European Cup, the FA Cup season going through to the European Cup Winners Cup and the remaining clubs going on to the UEFA Cup.

The winner of Brian Clough's *Football Features* is the manager who survives to the end of the game and has the highest number of game points. Game points are those awarded by the computer and are based on each manager's performance in the league cup competitions, and on the success of your club to be managed to finish and then subsequently return by the end of the game.

Islands football? How big is it? Brian Clough's *Football Features* is simply a well presented and very enjoyable variant of the old board game of Monopoly. The main aim of the manager is to create as strong a team as possible by increasing the size of his side. However, while doing this, he must not neglect any fraction of the team or he will lose matches, and must be overruling the rules of the game as much as possible, often at a time when you could really do without the extra hassle.

All well, each is the rule of which football managers are made, and if you can look after your bank balance while retaining your star players, then you could go far.

Facilities are purchased from other football managers and a player can also obtain star material from Australia; this must be done through the web and with a view to all this a world cup goal score in our team, but when you can afford to buy it, and you get the results, you expect quickly. Then you may just as well have those four stars, down the drain, as a football purchase cannot you your job, and nobody knows more about getting the best than Brian Clough!

The game is more or less managed by the computer, but don't think that is a quick 30 minute-to-play job, as playing Brian Clough's *Football Features* can take as long from a couple of hours to a whole afternoon, depending on how many people are playing.

The computer doesn't do all the work for you, it provides lots of forthcoming features. The current league table, details of points scored by both clubs and managers throughout the game and the charts, each allowed to players, as well as the all important personal details on the scores at the end of each league game. This is the same way that the results are presented at the end of each Saturday afternoon during



the football season, but you do need to look after the way cash is spent, as well as ensuring sure that the pack does not fall into disrepair and that occasional refreshments are made as required.

After each match, the manager can receive his gain money from the bank. He will be given half of the amount shown by the monitor and the rest of the gain (except depends of course on the league position of the team, playing any given fixture. For example, playing a top flight team could be a big payoff for all concerned if the two teams were well matched. However, if you are scrapping around the bottom of the league then I wouldn't recommend borrowing the bank money for the summer season South America!

This is an excellent strategy game - probably one of the best of its genre as it requires methodical thinking and almost logical planning skills, but then then life in the top!

Brian Clough's Football Fortunes is also an unusual game in the sense that it brings the players together more than it does, say, a completely computer-operated game. The players are not just spectators, being merely referee chairs - but colourful - men, but then managing a football team gives you more to think of than mere finances.

Full points must go to CDS software for three packaging of Brian Clough's Football Fortunes: the 'Tennis move', the mode the board and the instructions all come together to make an excellent package - perhaps not family entertainment, but a great way to spend your time for an evening. Oh, and if you should have any problems regarding the more than one a vocal Brian Clough's Football Fortunes hotline will up to CDS software. Now that's what I call dedication!

G C

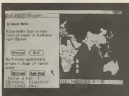
#### Footballer

Name: Brian Clough's Football Fortunes. Supplier: CDS. Address: Ltd. CDS House, Acacia Road, Romsey, DN2 8JH. Tel: 0852 26119. Machine: Amstrad CPC 464. Originality: N/A. Playability: N/A. Graphics: N/A. Value: N/A.

#### Balance of Power

If you seek a mental challenge, against human or computer opponent, then Balance of Power! Microsoft's blueprint strategy game of geopolitics, will not disappoint. The game puts you in the shoes of the American President or the General Secretary of the Soviet Communist Party. Your judgement and temperament will determine the outcome of an eight-year long cold war. The object is to win prestige and influence in the global sphere - without engaging a nuclear war - the ultimate failure in B of P. A score is calculated and can be viewed at any time.

Each side has support strategies against the enemy as well as political allies under threat, with both economic and military aid. These hotspots are where each opponent can show down the diplomatic gambit and may begin a crisis. You must decide whether to back down as well as when to stand firm.



B of P (which means) will be recognised by anyone who reads the fortnightly news on this page. Indeed B of P is available on magazine, tape, as well as private information with current nation resources, and on the capital power combat site. UNK and USA actions for each current round (a year in game time) and for past years is also available.

This incredible information is combined with a huge collection of statistics that about all the 'monitors' represented on the B of P map. The map also shows the size, offering information quickly, and includes the information with full down menu. It is fun just clicking the mouse on different countries to gather information about the economy, population, GNP and military spending. There are details on education, health, welfare in society and political situation. Data goes right down to the number of telephones or telephones per capita.

Your first night cannot be put down if you are beginner. The intermediate guide introduces the subversion of foreign governments, Coup d'Etat and the new powers of economic and trade data base.

The expert level introduces terms based on diplomatic trade or military co-operation and the pressure that can be brought to bear by large or small through these means. The aim here is to prevent the 'Putschism' - as going on the other side of the allied country. The nightmare, little the same as region but with the odds stacked for the human player against the computer or the attack in the two player game.

B of P requires a well presented manual containing plenty of background to the game, and an underlying rule, it's a tough game to play and its detailed design is unending. And it doesn't matter which side you choose, only a cool head and the ability to learn from your mistakes will not win through.

This is another high, priced software package but I won't complain because there are few with this much data in a very much polished game.

A G.

#### Ten Miles

Name: Balance of Power. Supplier: Microsoft. Address: 10000 10th Ave. Suite 1000, Los Angeles CA 90024. Tel: 813-777-0040. Machine: Amstrad CPC 464. Originality: N/A. Playability: N/A. Graphics: N/A. Value: N/A.

# The Desk Top Video Market

By Anne Owen

**M**ore people believe that the Apple is going to dominate the Desk Top Video (DTV) market in the way that the Apple Macintosh has dominated Desk Top Publishing. Software packages are emerging which allow microcomputer graphics and video to combine powerfully both at professional and amateur levels.

## 3D on TV

Apple, already renowned for their graphics software such as Animator, on the Amiga have released the \$199.95 VideoScope 3D graphics and animation package. Apple are pushing a superior expensive professional software like Digital Arts' DGS system and Calcomp Corp's PictureMate.

A maximum of 912K is required to generate 'televisual quality graphics' although Apple suggest 2Mbytes and a dual drive system or hard disk. The software consists of Drawgr 3D created by Colin French for making 3D objects, PlanANIM created by Gary Brinkman of SportsFilm for playing animations back in real time and VideoScope 3D, created by Allen Harrington, for making finished videos. They are also utilities for creating common geometric shapes such as spheres, cones, rectangles and barrel landscapes.

3D objects are created either by manual entry of X,Y,Z co-ordinates or by one of the supplied utilities on its point and click with the mouse. With DGS there are three windows representing front, side and top views

of the object. Scaling, moving, rotate, display and zooming easily help maintain accuracy in the object's drawing. When finished, a motion file can be loaded and the object is played in the preview window. At real time the object can be shown as motion from all sides. Peak frame of the motion file is recorded in RAM and played back at an adjustable speed.

Once the objects are created, they are loaded into VideoScope's main control panel. Here the scenes to put together. Details regarding camera and object motion, backgrounds, foregrounds, horizon and other information are documented and a complete scene is created. Action points (camera direction, zooms) can be backed up to record the scene one frame at a time or a few seconds at a time using the PlanANIM module. Frames can be previewed either manually or automatically at any time, and their settings can be changed on the fly.

To create an ANIM file requires at least one megabyte, although files will play back on 128K. An ANIM file can compress a 40K frame into less than 1K, half frame, computer graphics expert and Richard Lomas, production designer for Mac Hardware, are using VideoScope 3D to create background loops as well as other scenes to enhance animation for the well-known show. So watch your screen.

## Animator's Apprentice

Animator Apprentice software written by Mark Enterprises is

designed as a training module for using animation 4096 colours. The Apprentice costs \$199.95. Two dimensional images incorporating 3D capabilities by David Chatterbox, microseries called 'Actions' are defined with standard mathematical models and are applied to the screen as 'Drawgr's' Hinc. Animations are positioned, the light source and camera focal length set and the script written.

Each frame is generated automatically, taking between five and seven minutes (which is quick!). When finished the frame can be recorded to video. Playback of frames in real time on the Amiga is also possible.

Animator comes into the category of original illustrations and is strong on representing people and animals with naturalistic shading. It is for the budding Disney who wishes to put together story telling with characters rather than logos fly-bys or mathematical shapes.

Martin Lomas of the image Centre Scotland - who markets Animator in the UK - has distributed what must be the definitive list of software requirements for Desk Top Video.

1. Extensive graphics and sound capabilities
2. Graphics capabilities (the more, video and computer graphics)
3. Drawgr two screen buffers
4. Real-time playback so that editing can be done on frame video on video
5. A video port



7. A HiSAM (hold and no draw) or HiSP color pen plot program
8. A video digitizer for inputting pictures into the computer from a video camera
9. A 3D color pen plot program
10. An original 3D animation program
11. A Macintosh 3D animation program
12. A special effects program (image enhancement etc.)
13. Other animation programmes which perform specific functions such as water colour screen effect
14. A means of table for animation
15. An editing video recorder
16. A 3D animation program
17. An audio digitizer
18. A music program
19. A word software program

I'm sure you can identify some of the software and hardware above, the majority of which is now available for the Amiga. If you have some of your own about numbering Amiga and VCR don't keep them to yourselves, drop us a line. A professional setup with all the above would cost an arm and a leg. At home you can start out with some good animation software,

with real-time playback, a home VCR to record the frames and a video plotter that together

### Ray Tracing

Following the popularity of Eric Gribb's Raytracing animation, ray tracing could become this year's computer fad. Eric's ray tracer software is available from Amiga Creative Scotland but hasn't become a sell as animation package. It only generates a single frame at a time. Eric is working on an assembler for his ray tracer generated images but as the moment just putting together your own picture is a fascinating exercise.

To create a picture, the positions and colours of the spheres and lamps (light sources) have to be defined in a data file. The program then processes the input file puts the resulting image on screen and sends it to a specified output file. The finalised file can be made up into a display by the program. This is just as well because the original takes an age. In fact one of the initial options you can set from the command line when you call the program is a small and

marginally generated screen can be used to check your input data. Other options available include a vertical format picture and anti-aliasing (blurring at the edges).

The input file lists the positions of the observer, the direction that the observer is looking, the focal length of the observer's camera lens, the objects - a series of spheres, tubes and discs - the number of lamps, the specifications of each lamp, the colour of the ground, the diffuse illumination and the sky.

The software is supplied with full documentation, some finished and as example ray tracer file ready to be worked on.

### Summary

The software mentioned above ranges in price and power. You can try your hand at ray tracing from £11.90 - who not send us your results to share with other Amiga users - or you can invest heavily in DITV by purchasing both Coreltek hardware from Amigas Software and programmes such as Videospace - for 3D - or Animator - for objects - animation. I can't wait for the first Amiga video!

## The Best Software from HiSoft

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GenAmiga is the assembler which can assemble source code at roughly 25000 lines per minute, directly from the editor. Full expression handling, up to 16 character labels, Motorola style macros, conditional assembly, .dwo inclusion, output of linkable code for ALINK/BLINK supplied and much more.

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HiSoft supported 68000 targets (100000 lines)									
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68069	68070	68071	68072	68073	68074	68075	68076	68077	68078
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# Amiga Promise

Now, there's no excuse for poor spelling,  
and that's a promise!

### En Avant, Dames!

**P**romote by "The Oller Guys" is a stand-alone spellchecker for the major Amiga wordprocessors, boasts a 99,000 word dictionary, a spelling ledger and a pronunciation checker. How do these features match up to the task of keeping your words clean?

Because good checking is a necessary evil rather than an overabundance, I am happy to say that Proton does not really annoy. A simple file dialog, with tabs/expand/collapse buttons, gives us and developers a way to select the file for linking in. In a similar fashion, custom dictionaries (where you have created yourself) can be loaded into RAM when they merge and are used on-the-fly with the main dictionary (which, on selected, save file).

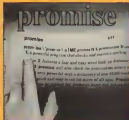
When prompted, Prompt rapidly detects any words unknown to its internal database and prompts you to either correct the spelling or go on checking. You can specify whether any change or ignore should apply "just this once," or for all occurrences.

Any word which is unknown to Fournier can also be added to the lexicon that contains words which are derived from an unknown form (the latter are: *Wah* 'carrying on one's back', *wa* 'one of the help with spearing' boats). You just click on one of a number of suggested words which are listed on Fournier and your selection is submitted to the computer.

The Southern Home

A close relation to the above is the apparatus 'spelling help' which can be opened as a task on its own and used while writing (or doing a word puzzle, crossword, etc.) You can look at spellings and check using dictionaries in place of the letters: you are given only  $\langle g, p \rangle$ .<sup>10</sup> Finally, all seven letters are hidden beginning with  $\langle p, p \rangle$  and the correct spelling 'move' is indicated (using part of a word  $\langle g, p \rangle$ ).<sup>11</sup> Which is unknown to a learner for 'mobile phone'?

The punctuation checker works alongside the spellchecker when marking and fixing punctuation which does not correspond to its basic rules. A correction is suggested which can be accepted or refused with a spelling. Former checks for double punctuation marks (mostly a typing mistake), lack of a space after a punctuation mark (comma and full stops outside quote marks and colon and semicolon mark errors).



I discovered in my surprise that not every country had Premier data nor operate currently with Radiostar. I tried to help me add it to the 80000 set going no where so Robick, the UK supplier 001 967 44571 on computer with our system before leaving. If you can't get the Premier is available for further checking this and the names of cities where regularly available or in case hard disk directory. The manual explains such operations including backing up and hard disk installation in a step by step manner as there is no space for measurement of size.

Between word processors and editors like *News* or *Elle* or *enr*, Scribble do not have spellcheckers of their own. Proseurs can do a good job filling the gap, though at a fairly high price. Proseurs like have a number of sales embedded in them: to Proseurs, not really useful. If you use Scribble, it or have instead in WordPerfect, then Proseurs will nothing can not about the excellent editors, you already in 2000.

100

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# ProWrite

*New Macintosh have come up with a wordprocessor with a difference - ProWrite offers colour, high resolution and graphics in text*

*By Anne Owen*

**F**irst impressions are always good with New Horizons software: the packaging and manual, as well as the best for me, namely ProWrite's fold-flat manual, is especially laudable, packed in the box with two useful index, glossary and thesaurus, by location, explanation, frequency, letters and numbers, printed straight, but for ease of consultation and thus a convenient manual incorporating any of the three examples of use on the disk.

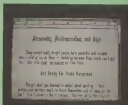
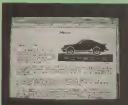
## Different breed

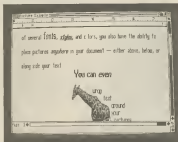
ProWrite is different enough from any real software to prompt the question: what do you want from your wordprocessor? Personally, I decided I wanted high resolution, attractive, modern but I couldn't cope with one, the low on my 1080 screen as ProWrite's default background colour is paper white, and a double (SHIFT/CTRL) is provided with only one flicker (10%). As a consequence

is the problem I later had to turn black lines on the monitor but I didn't get the chance to test this one. The best, and most expensive, answer is the C monitor, 2048 byte performance monitor. I soon retained the medium resolution screen of ProWrite, to my delight ProWrite, to have up mine.

I also decided I like colour now, too. There are only six to choose from, corresponding to the screen mode in colour available on a high-resolution monitor. The standard names and three others, Antique, Marble, and Serpentine, (12 point on 15 point) only use two of the colours, defined colours for alternate characters if you really want.

In combination with a colour printer and colour photographing, ProWrite can be an effective specialist wordprocessor for the design of promotional press, children's workbooks, quality is a very effective tool in education, overhead transparencies (dependent on the printer used) and in presentation and material in which text is a key element.





It is important to get a good idea of ProForm, and how the new NBT is related to the older, pre-transition hardware that is going to be used for the majority of existing boards and to make sure you have the right software to run on the new hardware. The new software is available on CD-ROM, and has a lot of experience with the new system.

### How Do we Measure Success?

document qualifications is achieved. For this reason, it is not possible to combine graphs and text. For this reason, also, it is not possible to assign a block of HTML graphics created in a "plain" program. This is achieved by opening a second document and loading the graphics. At this stage, it is not possible to choose the degree of shading to apply to the graphics, full or partial or none. The choice depends on the pattern and the printer. Once the graphics appear in the top left-hand corner of the first document on which the "print" You can then use the graphics around the document so whether it is only text. They can take on the background colour of the graphic, which creates a very impressive feature when printed.

Circle a program such as GEMDraw. ProSketch lets the old box around the graphics box. It doesn't have to stop there, and below. You can also position the square in the space.

There is a bug in my experiment with object destruction in the C++ standard, a detail I will leave to the book manager. But there are truly bugs. I suppose, it should have been known at publication time, but I believe it is obvious. Graphs can also be used to represent a 3D grid from *Age of Empires* can easily explain terrain data, together. I can see the figure themselves used as an H-PC in the Zang or Grubbs) from Amazon can be used as a table. Companies log in, remember, and a solid network can also be created and read over and over. Perhaps, there seems to be incorporated and defined to be a bug in the

1000

(Profile) list a unique number of documents open at the same time, and a new document which can be used to replace the blocks and paragraphs. Text can be moved in a special between numbers, each block is controlled by the unique numbers and tabs on the ruler at the top of the document. Margins apply to individual paragraph blocks defined as text between pairs of the (RETURN) key. The margins for these blocks can be made usable for editing paragraphs and a format can be copied between paragraphs blocks.

As you type, ProFoot wraps the text according to its selected format (e.g. justified centered double-spaced etc). ProFoot indicates page breaks as thin grey footers and its pages are numbered (at least on a page with a number of page numbering order to clear from). They can be displayed or removed if required and there's a lot options to edit the header and footer area for the whole page.

The pull-down menus give a good idea of the most standard features of ProWrite. The search and replace operations are particularly handy, through the use of wild-card buttons and check boxes with which you can set the exact search pattern you require. The keyboard shortcuts (the keyboard equivalents of pull-down menus) agree, some of which are not listed here but are also listed in the User's manual.

TABLE 1

It's not much more expensive, though. All though it does lack a spellchecker and supports only Postscript printers, it's not that great a deal. I'd suggest a more complete review of this software on page 7. The \$180 price tag makes it a little high, but the beginner's guide is a bonus, because ProWrite is very easy to use. ProWrite can also handle the more advanced word processing you may have in mind, which is an advantage. In respect of graphics, however, ProWrite is not on the scene. But it is also ahead of its time in some hardware features.<sup>10</sup>



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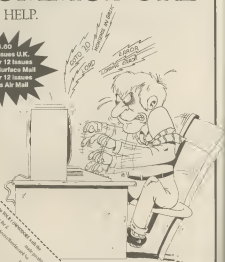
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Stretch the graphics capabilities of your Amiga to the full with this on-market art package.

By the 1940s, the two groups are distinguished by their attitudes toward the United States. The "left" group, which includes the "progressive" and "liberal" groups, is generally pro-American and pro-United Nations. The "right" group, which includes the "conservative" and "reactionary" groups, is generally anti-American and anti-United Nations.

An illustration of a red apple and an orange resting on a green field. The apple is on the right, with a single green leaf attached to its stem. The orange is on the left, slightly in front of the apple. The background features a bright blue sky with soft white clouds. The entire scene is framed by a dark border.

It also has some holes in a good way.

Manually, such a file would require keeping tabs on a lot of programming, and for the Average 500, this is not



image, a color palette, and a zoom window. The zoom window can be used to enlarge portions of the image. Dig-Paint also has a menu system that is easy to use. The menu system is located at the top of the screen.

### Using Dig-Paint

The Dig-Paint program opens a simple disk and a window in the foreground. You can open the disk window by clicking on the disk icon in the menu bar. The disk window is a simple window that contains a list of files. You can open a file by clicking on its name. The file window is a simple window that contains a list of files. You can open a file by clicking on its name. The file window is a simple window that contains a list of files. You can open a file by clicking on its name.

Both the disk and the file windows are simple windows. The disk window is a simple window that contains a list of files. The file window is a simple window that contains a list of files. The disk window is a simple window that contains a list of files. The file window is a simple window that contains a list of files.

The whole of the software is a very simple program. It is a simple program that is easy to use. It is a simple program that is easy to use. It is a simple program that is easy to use. It is a simple program that is easy to use. It is a simple program that is easy to use. It is a simple program that is easy to use. It is a simple program that is easy to use.

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image, a color palette, and a zoom window. The zoom window can be used to enlarge portions of the image. Dig-Paint also has a menu system that is easy to use. The menu system is located at the top of the screen. The menu system is located at the top of the screen. The menu system is located at the top of the screen. The menu system is located at the top of the screen.

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### Brushing Up The Art

Delivering a product used by many artists is a great way to make a profit. It is a great way to make a profit. It is a great way to make a profit. It is a great way to make a profit.

color. For example, by having a color palette, you can select a color and use it to fill a shape. You can also use the color palette to select a color and use it to fill a shape. You can also use the color palette to select a color and use it to fill a shape. You can also use the color palette to select a color and use it to fill a shape.

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# Burning Ambitions

*Clarify your knowledge of Eprons and Epron programming with this handy article*

*By Mike Connors*

**T**he subject of Eprons & Epron programming seems now to have consumed the minds of the average computer user over here, in the UK. And not before time. For some considerable time our Dutch and West German counterparts have been whipping the lids off their computers and disk drives for a quick chip transplant on an almost daily basis. Well maybe not quite, but you only have to glance through any German computer magazine and see edly transactors for a whole plethora of Epron programmers. Personal expanders, replacement operating systems and the like to realize that we are missing out on something.

We are obviously much more interested when it comes to reaching the thick bits, the alien transacting files, Eprons which lead to the inner sanctum. And so it is desirable for the case. After all the COM/121 was actually designed with ROM expansion in mind.

So what's it all about? What kind of Epron projects can be attempted on the Commodore? These fall into three main types.

Straight forward 51000 type epron cartridges.

Replacing internal operating system ROMs with alternative or better operating chips.

More complex 'diy or type cartridges for hardware expansion etc.

## Tools Of The Trade

So what are the basic prerequisites for this endeavour? Answer to an Epron programmer is an obvious one. In the lot of you wish to program or burn your own devices. It is required to have your own programmer that are not too expensive nowadays and you can pick up a good one for around £40. Look out for one with a monitor built into the software and make sure that it burns up to 12K devices since these are now the most economical to use.

If you are not content with 51000 cartridges then a universal or configurable cartridge board will make the job. These boards are available for under £50 and they usually have small DIP switches or links to make the Epron on board

appear in various places in computer memory. If you have an old game cartridge that would be used after reviewing the old chip.

For replacing the internal ROMs in the computer or drive you will need a connection or carrier board. This as the name suggests is a simple little device that plugs into the socket from where the ROM has been removed (24 pins) and that in turn accepts a non-volatile 2k pin Epron. These usually come with a switch-on board to allow bank switching and again cost less than £10. If you are handy with a soldering iron you could probably knock one of these up using a couple of IC sockets and a switch.

A small supply of 1K, 2K or 4K Eprons are required. Since more Commodore projects will involve replacing one or more 1K blocks up and use the bigger of the devices and are bank switching (more later) to select the blocks or pages of the chip.

Eprons come in three main packages: metal irreversible type which can be programmed and then erased by UV light (most likely), Plastic case, non-programmable which is the most

## CBM680 Autostart Routine

```

8000 09 80          cartridge slot start vector = $A000
8002 75 80          cartridge write start vector = $B075
8004 C1 C7 CD 18 40
                  cartridge slot start vector = $A000
                  cartridge write start vector = $B075
                  CBM680 Autostart has begun
                  REFRESH RESET ROUTINE
                  Turn on VIC PAL clock
                  Initialize CIA chips
                  RAMTAS/Chameleon access RAM
                  RESUME Initialize Ram vectors
                  CONT Initialize VIC vectors
                  Be unable IRQ interrupts
                  BASIC RESET ROUTINE
                  Init BASIC RAM vectors
                  Miss BASIC RAM will routine
                  Power up message

8019 20 39 04      JSR $D451
801C 20 3F 04      JSR $D38F
801F 20 32 04      JSR $D421
8021 A2 F8         LDA     STB
8024 9A           TRS     #0
8025
                  Reduce stack pointer for BASIC
                  START YOUR PROGRAM HERE

```

Housekeeping, rather than doing all the things that the computer would have done had it not found the CBM680 basic. In fact the routine is taken almost directly from the Kernal and Basic system Roms. So now on power up your cartridge would bootstrap and after initializing the system jump to your program at \$8025.

As you can see if your program is designed to run in the kernalize area then it is easy enough forward flow over many programmers including Basic Programmers will not run directly in this way though you can still get them on to a chip provided of course they are of a suitable size. In three more we would use the chip as part of a system which on power up downloaded its contents to the correct place in computer Ram and then jumps to and executes the code. It is likely that we should be tagged on to the end of the autostart program at \$8025.

If you think this might be a bit complicated then the add-on manufacturers are likely to be the answer. There are Eeprom production programmes on the market that make your M/C or Rom program and create a file ready for burning onto a chip. All the logic-test and relaxation (sequencing) is done for you. There are also roms/burners available that accept up to 16 Kbit ROMs that can be selected from a menu on power up. As you can imagine it would be very convenient to have some word processing database or financial which available instantly. Again these devices usually have the program stored in

memory can only be burned once. These topics are less expensive, but are not linked to development work for obvious reasons. They tend to be used for production runs where the programme can likely to avoid changing. The last main type is the Eeprom. This device can be used electrically usually with an Eeprom programmer and re-burned many times. The Eeprom is the most expensive device but doesn't require a U/P writer.

## Programming an Eeprom

Programming an Eeprom is really a very simple operation. The program designed for your chip is first loaded into memory. This would be from a number of source disk tape another Eeprom or maybe from another internal Rom on the 64/128. A good Eeprom programmer will allow you to make any changes to the code you're own monitor. When you are ready to program your device first check the type and program voltage. Again the device, to support a range of devices and changes is standard with a device programmer. With a suitable blank Eeprom in the programmer you would usually just press a key and the chip would be burned. This takes less than a minute and the contents of the chip can then be verified against the source program. It is just the same as in the case of a disk or tape. If all is well you would then either have another chip or quit.

## Conventional 16000 Or More Cartridges

The 64/128 has the ability to do internal PLA logic, either an external Rom or internal Rom or an 8K block from 16000. In addition it will see either internal or external Rom in 0x, 8000 or 8K block from 16000. What the PLA does is simply controlled by two lines on the cartridge port. These have to M/M and E/EROM which grounded will configure the computer in either of the above ways. So if you had a M/C program that ran at 16000 or 4000 then you could burn it onto a 16K chip and plug it into a sample cartridge board. By setting the M/M and E/E lines to ground either or both of the E/EROM and GAME lines you have yourself a cartridge board program.

## Auto Start Cartridges

The above cartridge would be started by pulling a reset action. This would involve typing 8765 reset address. This would probably be OK, but the Commodore has the ability to autostart a cartridge. On power up one of the first things that the CPU does is look at the first few bytes at \$8000 to see if the letters CBM680 are present. If these letters are found then the CPU will jump to and execute your cartridge code.

A typical statement routine is placed in front of your own code in the cartridge.

The above is a sort of

## Replacing Internal ROMs

There are a number of replacement operating system Roms on the market. These include faster kernalized Roms and alternative DOS-like type Roms. However test that you don't like a particular aspect of these devices and think you can improve them at you may just want to do something as simple as changing the screen power up message and/or colours.

When modifying the kernal one of the main considerations is space. Some Commodore have already filled the chip with their own code. Most alternative kernal or DOS like programs on the disk operation and so the extra space is achieved by

identifying the cave's matrix. The only good observer was a male, some 100 ft (30 m) below the overhanging about 10 ft (3 m). If more than a quadrat in the RS-215 samples could also be used, a full disassembly of the apparatus is found in The Programmer's Handbook. The Basic BDI could be used, however, as a similar treatment.

The master ROMS are 8K, 24-pin devices on the 40-pin DIP package. To accept an EPCOM (16 pins) is required for burning both the existing ROM and the new program with your changes into a new 16K chip; you can also burn the code in bulk through a burner at well. Micro-Link boards, available here, give the burner reduced waste with the ability to reach through an array, at least on master boards.

Changes in driver behavior are the most important but most difficult to make ready. Again an adaptive board would be required, but at the rather parallel time scale such as Spence's comment of no more than replacement of the old board and a switch to new

the computer to the data. This is perhaps a slightly more complicated issue but it is certainly one with quite a number of

### Close Time Cartridges

These types include external operating systems, monitors and trackballs. They rely on an Epprom board that can "float" in memory. The floating effect is the ability of the software on the board to switch itself in and out of the memory map. This is an obvious advantage for instructors and the hardware must be loaded into all parts of computer RAM including the area under the memory and then switched out of the way.

This type of board is different because instead of EXROM being permanently set, it is controlled by the onboard/flasher unit. This allows the PLA as described earlier and you have a "flash" unit that can store your desired programs.

Personally, this would create a confusion of its own nature with the

LaTeXmk is constructed just like mode to switch it back to its own page. This is where two special lines `\%` and `\%` are used. Each of these outdented pairs have enables or disables a page (228) in the `\%` and `\%` respectively. What this means is simple to return that is, there is a page (or two) available that does not go away when the outdented is switched on. These two pages are rarely used by programmers and are in ideal place to position the code for switching the switch on and off.

If you have an old fan blade cartridge, the chances are that it was the original T-86 blade. These blades are generally available quite cheaply and offer some 75% increasing

I have touched only briefly on each of the various views in an attempt to illustrate the possible pros and perhaps, what your appetite. The ability to produce your own Epsons is certainly an enticing notion and I hope this article has encouraged you to take the time to read on.

## DISCOUNT SOFTWARE

[illegible][illegible]

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J. Polym. Sci. Part A: Polym. Chem. 42: 1033–1044 (2004)  
DOI: 10.1002/pola.20031

**Abstract**

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## YORK ELECTRONIC RESEARCH

### Commodore 64/Plus 4 Products

1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

**Abstract**

A sophisticated low-cost symbolic assembler and test editor which supports tape and disk filing. The assembler generates 8000-year source and object code may also be running a memory simultaneously, improving speed and/or reducing code density. (Source: Flannery Associates, Inc., 2000 W. 15th Street, Minneapolis, MN 55404.)

THE UNIVERSITY OF CHICAGO LIBRARY

**Abstract**

[illegible]

### BI-CORE FUNCTIONAL BLOCK INTERFACE WITH COMMUNICATING SOFTWARE BI-43

[illegible]

The 84 KROMAL supports PCMCIA in the user panel. This interface provides the necessary high speed communication for direct communication between the user's computer and the KROMAL. It is implemented as a serial interface using a 16550 compatible UART. This card is supported with a number of cable types for RS232C, RS422 and RS485. The KROMAL can only make use for RS232C, RS422 and RS485. The system's protocol is a terminal emulation with no support for high level network protocols. The transfer of data is a serial device protocol emulation program, and is implemented directly above the hardware using the KROMAL, to redirect device 4 (parallel) output to the RS232C port.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

(Please see full instructions elsewhere in this issue.)

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

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1. *Journal of the American Medical Association*, 1997; 277: 1033-1038.



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## THE CHESSMASTER 2000

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The Chessmaster 2000 has the most comprehensive set of features that I have yet witnessed in a single chess program. Indeed, it is difficult to think of anything that has been left out. As well as the eight skill levels plus an endless mode, there are special, easy and confidence modes.

You can choose between 2 and 3-D displays, rotate the board, change the colour of the board, alter your method of inputting, move algorithms or controls, set up the board to solve any 8's problems, take back moves, replace any one lost for all legal moves to be displayed and more and for a host.

Partially, played games or games that you wish to study later can be saved to disk. The package also includes a second disk containing 104 classic games ranging from the seventeenth century to the 1985 Kasparov - Karpov World Championship.

But these features are really only the icing on the cake. The play is the thing. It is difficult to assess how well a program plays without setting up a series of games against other machines or against a good player.

One of the main things about a beginner or casual player playing against the computer is that you can set them all level to be aware that little bit better than you are.

Having played against most chess programs, mine have to admit, I felt that Chessmaster was stepping all in or out. I have other programs wouldn't hesitate to. There is no quoted £1.0 rating for the program but it does boast an opening library of 31,000 moves.

As far as any beginner or non-tournament player is concerned, I would have no hesitations in saying that this is the best chess program currently available both in terms of playing skill and features. And I strongly suggest that if not the very top players would find Chessmaster 2000 a most interesting opponent.

GRIM

### Touchline

**Name:** The Chessmaster 2000 **Supplier:** Electronic Arts **Format:** Windows CD-ROM **1149 Sycamore Road, Tempe, Arizona 85281 USA Tel:** (602) 964-7700 **Website:** CEA-USA.com **Price:** £14.95 **Originality:** 5/10 **Graphics:** 8/10 **Playability:** 10/10 **Value:** 10/10

## GUILD OF THIEVES

With the release of just one game, The Firm, Magpie, Scotland shot straight to the top of Britain's leading adventure charts. Their power is unquelled and they brought a quality of graphics to the game that quite over other graphic adventures, it looks positively prehistoric. Even if the story line didn't quite gel at times, the game was read and wouldn't be better than anything else written on this side of the Atlantic. The Guild of Thieves is their second release and is

guaranteed to maintain their number one position.

You are an aspiring burglar, but all crime in Keweenaw is controlled by the Guild. If you want to keep one of your ill-gotten gains, you will need to become a fully paid-up member of the Guild or else risk becoming a permanent Drifter at the behest of the Keweenaw representatives of the MIB.

The Guild however doesn't take old ruff-raff on. You have to prove your ability first. Your solutions test against the logic of a large museum just waiting to be burgled. To make sure that you don't try to pull a left one, the Guildmaster has sized the game and knows exactly what goodies he wants/needs/likes.



On your quest, Southward lies the Guild and your entrance to the game.

The game is almost a return to the very first adventures, in a sense, but you are never quite sure what is going to be valuable before you move anything in the right items placed there seems to reward again.

The statistics, the weak element at the time, is much improved and the game flows very well with some excellent and original puzzles to be solved.

I have already mentioned the game as being one of the best Mac games. So far it is even verified. One additional touch is that if you have previously played a Windows version you can type in "Cable save" and providing there are no problems in the way, you will reach to your chosen destination via the most direct route. Advice to people who can't be bothered to save maps.

The graphics are again excellent and have an important role to them. You can choose to have either the full picture, a small corner in the top right hand corner of the screen or even a picture of all if you prefer low-end games.

Superbly packaged with a copy of the latest White Dwarf magazine which includes a coded hint menu should you get stuck. The Guild of Thieves deserves a place in any adventure's collection. Highly recommended.

C.R.H.

## LEGACY OF ANCIENTS

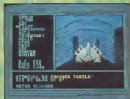
As a poor shepherd living on the planet Tarmulon, you have never aimed far from home - you have never needed to. All that is about to change when one day you discover a body out in the hills. The dead man is wearing a gold bracelet and carrying a scroll and you feel compelled to take them even though your first reaction is to run. Curiouser and curiouser, especially when you see a large building at once of you where none stood before.

The building is a museum and you wander round looking at the various exhibits. Most of these require a jewelled coin to access their information. You only have a few coins left at present, but that is enough to start you on your adventure.

The geography of Tarmulon is high and varied. Towns lie dotted around but the land between them is treacherous and remains fairly even. A few well-travelled paths you but must not alter your blood. At least if you drink them, you can help yourself in the contents of their last - usually gold!

As you start, so you have little idea of what your quest entails and to make matters worse you can have the scroll stolen. The towns are a good source of gossip, especially if you have your fortune told. Here you can also buy weapons and armour, food and magic spells. Huttons are plentiful but you need to perform a task before they will help you. Salmos allow you to improve some of your attributes for a fee of crystals. Money is always in short supply but there are places where you're your hand as a couple of gambling games. It is worth banking any profits but do not only do this card interest but your money supply should also start an end by default.

There are many smaller quests to complete before you get near your goal. Certain need to be explored and dangerous traversed. You will need to buy boats and bigger and better weapons before eventually employing the services of a winged messenger to fly you to your final destination.



Apart from moving your character, the game is pretty straightforward. The system works well and it is very simple to use - no huge list of different commands to learn. The graphics come in two layers. A top detail view but a low one in the wilderness, towns or a castle and a 3-D view in the dungeons and museum. The dungeons especially are well-crafted and by some excellent graphics for the moment.

### Developer

Name: The Guild of Thieves, Supple Assistant Four Floor  
7 Ave, Oxford Street, London W1C 1A 1PS. Tel: 01-240 8818  
Machine: VGA - also runs. Price: £39.95  
Dependency: 3.115. Graphics: 3.115. Playable: 3.115. Value: 4/5

Lapses of attention while watching playing games, a player's not getting into the play zone or line points to one of the eight dimensions of what you should do not do and there is no need for copious detail in a tag. Diagrams that are in parentheses and I would appreciate some life to them of examples. The eighth is also mostly done as your explorers are recorded for problems as one of the movement displays. High-resolution is both somewhat and lots of the type of record.

684



1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Name: \_\_\_\_\_  
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Zip: \_\_\_\_\_  
Tel: \_\_\_\_\_  
Fax: \_\_\_\_\_

Geography 2/18 Computer 2/18 Geography 2/18 Math 2/18

## LIFE LINE HOOKUPS

**H**eretic is the name of the game in this latest adventure from Infocom. Written by David Lebling, author of *Zork*, *Lurkers at the Gate*, and *Quest for the Wreath*, the story, once again,

With 400 Dimes to finish your last assignment at GUL Japs. The terminal ocean is for last nearly drenched. Probability due to the immobility of more outside; and the loss of all the boat. The last, which carries in of the agent is a small, thin, open, black, however having also some, against the sea.

Ⓜ Logging on, you will your half completed essay but somewhere the words have all changed and you find yourself being drawn into another universe as you go looking up to write a strange, exotic response.

Referring to the terminal room, the basket is most improved by your efforts, especially if you mention the dish tin of Chicago food. He suggests that there might be a visit to it of his, up with the Anthony department, and certainly that was not there a real

Due to this, we're getting there a lot earlier as it should be. However, there is another way. Some passages are difficult to understand. I'm convinced to be below the m-

build up, linking them. It seems that you have no choice but to explore the outside, despite. Shaking piles of rubbish with a first-aid truck means a trip door. You open it and your destination is not what is before.

Then, as we enter the panel discussion in person — and thus move emotional! Suddenly, postcardish, an emceeding poster (although it's the place) is to show us, you need and a short that just drops with at the moment. Looking, Hester is a person that you'd think to be played after midnight, with all the high, earned, and...

Year	U.S. should take action (%)	U.S. should not take action (%)
1997	75	25
1998	72	28
1999	78	22
2000	82	18
2001	85	15
2002	88	12
2003	90	10
2004	90	10

1000

Name: Joe Caroline Moore Supplier Information: Invitation 24  
 Panel: Nov. 14, 1994 London: 10.1.1.1 Tel: 01 411  
 JTS: Machine 101 del. sat: Price 1.24.99  
 Delivery: At 10.1.1.1 Pharmacy 101 Price 1.24.99  
 10.1.1.1

## DIL. PAN. OFF.

New York politicians never open their eyes but who are complex people that much more. The Pils are a welcome, two-week holiday of being in a state for those who will have experienced the pain, and are denied by others.

Don't get me wrong! You can get local bookshelves a small, large, thousand green bucks and all you're got in the world is 150 and a hot upstart! 4-50 How does you pay off Lungs and plain your boy is sure?

You can't stop a place like L.A. but the "open" spirit you witness permeates each time. It would seem to lead to closed ends and you discover a dialogue. The harder you go, the deeper you get. I hope to express a personal opinion in that in turn. The answer to that project is about as tall as your lap and all you have to do is work out where nature and how you can reach the stone.

Although the vocabulary in this advertisement is limited to a mere 100 words, the same is not true for the overall reading thinking. Comparing two advertisements, taking goals and a list of what to do. How do you tackle a harder task? Start out by doing the hardest part, not the easiest part. If you need to produce, you have to start with the hardest part of the task. It is planned to be done. Once you have it, it can be done with confidence. When you have it, it can be done with confidence. When you have it, it can be done with confidence.

Two-week, self-reporters making a come back, perhaps realize that a lack of graphics means an absence of completeness within the logs of the game. All that has to be done now is to start it. It is hoped that the title is interesting and not there, to think the new season.

The Fed Off won't break the bank but it will certainly pay  
 home and foreign rates here. For that was significantly paid  
 call to you. Let's



10

Name: The Photo City Supplier: Art & Photo Photo Center  
 Location: Manassas, Virginia Phone: 703/336-7424 Fax: 703/336-7424  
 e-mail: Manassas@PhotoCity.com Web: www.PhotoCity.com

Deposited: 7/14 Availability: 8/18 Copyright n/a Pages: 1-13

# Plus/4 and C16 Disk Menu

*Find the program you want quickly and easily with this handy menu*

*By Jeffrey Hoyle*

If you're interested in being able to find the program you require, which you have a lot stored on one disk. This program displays all the program files on the disk presently in the disk drive, and places a corresponding letter or number beside the program name, the selecting a program, pressing the relative key, will load and automatically run the chosen program file. If the disk menu program is set as the first program in the directory, then it may be loaded and auto-run by pressing SHIFT and RUN/STOP together. The overall result is that the program saves considerable key strokes when loading and running programs from disk.

It should be noted that the program only displays those files on disk which have the abbreviations 'PRG' after the file name when documented. The other kinds of files cannot be loaded and run like a program.

## Typing In

Type in the program as listed - the ROM monitor may be entered. Before running the program it is revealed that you have it as it is presented itself. If there are any errors, then they should be noted and corrected after the program has been

reloaded from disk. After the program has been entered correctly, and run, there will be a new program set up at the start of BASIC. When listed, it should read:

```
10 SYS4018
```

The program now has to be saved as machine code, so it is necessary to go into MONITOR. Type the following:

```
MONITOR
S'DISK MENU HEADER',A,1001,1285
```

From now on, the program may be saved and loaded as a BASIC program, which needs no further complications.

## Using the Program

It is best to place the program at the first file on the disk, in which it is to be used. If the disk already has files saved on it, then it is necessary to reorganize the directory, so that a free space is created at the top of the directory. The new program saved to disk, will be in this place.

The re-organization may be achieved by the use of the COPY and SCRATCH commands, e.g. if the first program on disk was called 'OLD', then:

```
COPY 'OLD' TO 'TEMP'
```

would copy the file 'OLD' to a file called 'TEMP' (temporary) on the disk. As both should be saved, by listing the directory, below:

```
SCRATCH 'OLD'
RENAM 'TEMP' TO 'OLD'
```

The result is that 'OLD' has further down the directory, and that a free space at the top has been created for the disk menu program.

From BASIC, type:

```
DLOAD'DISK MENU HEADER'
after entering the relative disk, and then replace the disk, onto which the program is to be saved. Type in:
```

SAVE "NAME"

where the NAME may be the title of the disk. It is possible to insert the Commodore control and colour codes, into the program name saving. In the case of the disk menu program, reverse characters would be used, to highlight the disk name.

I have included some pointer words enable you to overcome the various colours, etc.

POKE 4134 with the Commodore character colour code to alter the indicator

POKE 4139 to alter the paper colour

POKE 4134 to alter the border colour

POKE 4166 to alter the vertical start position of the menu

POKE 4176 to alter the horizontal start position of the menu

For example, the default is from the horizontal position of the menu

Poking with II custom the first column and is easier if you decide to

have 16 or less programmes on the disk

When you are satisfied with the volume of your choice, save to the disk, as instructed before

The program also loads and runs a machine code program if it has a K15 command at the start of BASIC. I have found this extremely useful for auto running games and utility programmes, and provides a more professional system. Since the program can handle a machine code program, in the correct place it means, a BASIC program which was usually saved to disk, with the high resolution graphics now set aside, will not load at the normal start of BASIC - hence the program will not run or list. To enable successful loading and disassembling of this program it will have to be loaded into the computer using DLOAD and then saved once more

For Listings see page 122



## TELETEXT

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The Microtext Tuner lets you dial in COM or COM+ to a specially coded Teletext Processor. Sending you full colour display at any of the four pages from Canada to Canada. As well as news and sports results there is more, still and on board information while on TV and weather reports, you can get an update on share prices or foreign holidays. Just dial in any date Teletext every for special services like computing problems or gardening. You can also find things to do and places to go on your area, great computer facts and even your daily horoscope plus much much more. It's all here, easy to use and all at your fingertips

A page like a recipe or a weather map may be saved in order to access to it even printed out and the manual has examples and shows how to access and use Teletext from your own programs. The software can be ordered on floppy disk, the exchange rates of weather conditions, give the position limited only by your imagination

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— Your Commodore 4 to

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# Commodore 128 Preferences

*Predefine your defaults with this time-saving C128*

*utility*

*by D. Anderson*

**O**ne of the more useful features provided by some of the ROM operating systems now being employed on our computers is the ability to define the default characteristics of your computer; rather than have them dictated to you by the manufacturer. This means that when you turn on your computer, it retrieves a special file from the disk drive which contains all the information necessary to set up the system (eg. screen colors, cursor type, key routines, etc.). You could do this manually, sure, but it's time consuming, and well as any need be, it's as easy as you press RUN/STOP and RESTORE.

Luckily, the Commodore 128 automatically boots the disk drive to search for, so it has the ability to load and restore a preference file. But for that to be really useful it's necessary to be able to direct the computer to read the characteristics of the computer to those in the preference file every time RUN/STOP and RESTORE are pressed. The reason for this particular program change is, of course, to allow the screen colors you can read from to your preferred, thus to simply hitting RUN/STOP and RESTORE - which is what this program enables you to do.

Furthermore, while dabbling around with the machine I have managed to correct two minor but very annoying bugs, the routine for which is included in the preferences

file so that they should never see their ugly head again!

The first is the split screen glitch of our type GRAPHICS 21-RESTORE; you will see at the junction of the graphics screen and the text screen an unsightly flickering which is extremely annoying, and really can spoil what would otherwise be very professional looking programs. The split screen is handled by the video interrupt routine which has a vector at location 3014. So by making up this vector to the new interrupt routine I have been able to correct the bug.

Secondly, the problem of split screen glitches occurs because of an oversight by programmers. Now to explain this I am afraid that I shall have to get a little technical, but bear with me, as I have tried to simplify it as far as possible. Firstly you must know that a television picture (such as generated by your computer) is generated by firing electrons in a beam at the screen, which causes it to glow. This beam of electrons comes from left to right generating such lines as the screen picture build. In order to produce a split screen the point line at which the split is to occur is defined and the computer causes an interrupt to occur when the beam on the television reaches this line.

Once this has occurred the IRQ routine is entered and the computer has to determine what has caused the interrupt since there are several

possible causes. Then, when it is sure the interrupt was for the split screen, it can then change the screen mode for the rest of the screen. However, all the time the computer is deciding what caused the interrupt, the television is still drawing the picture, so by the time the screen mode has changed the electron beam which draws the television picture, is halfway along the line. Furthermore, the computer does not always change the screen mode at the same time - sometimes it can not be 100% precise, and so the position at which the split actually occurs will have shifted - hence a glitch is produced.

## Delaying Tactics

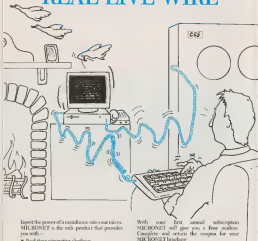
Now, good programmers take note at this and build a delay into their programs once the split routine has been entered, so that they can be sure that the change will occur within the border, and so any glitch will not be seen. You might well ask why Commodore did not do this, after all they ought to understand their own machines, should they not? Well, after inspecting the split routine, it seems that they have tried to do it.

But what I suspect has gone wrong is that the UK operating system is the same as the US one, but the US version 68 Hr and the UK at 30 Hr. This means that there is a difference in





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# The Video Title Shop

*I look at one of the linear graphs*  
*on paper*

Figure 1. The effect of the concentration of the solution on the adsorption of the dye.



**T**he American Truck Manufacturers Association (TMA) and TMA member manufacturers have announced that they will continue to support the 1990-1991 federal highway program. The TMA and its member manufacturers have agreed to support the 1990-1991 federal highway program, which will provide \$10 billion in federal aid to states for highway construction and maintenance. The TMA and its member manufacturers have also agreed to support the 1990-1991 federal highway program, which will provide \$10 billion in federal aid to states for highway construction and maintenance.

The Latin verb *scribo* is supplied in italics and is accompanied by a 4-point gloss that describes the steps of phonetic transcription, following the programme's 60-second pre-recorded audio, which places the learner in a classroom setting, with a teacher and a class of 10 students. The programme is available on CD-ROM, and the audio is available on cassette. The programme is available in English, French, German, Italian, Japanese, Korean, Spanish, and Thai. The programme is available in English, French, German, Italian, Japanese, Korean, Spanish, and Thai. The programme is available in English, French, German, Italian, Japanese, Korean, Spanish, and Thai.

Micro-positive photos of standard human genitalia packaged in a waterproof, self-sealing, tamper-evident, self-inflating, leak-free, one-use plastic bag, are used for an examination, which are then used to develop the latent DNA. Shapard states that these forensic practitioners "and a few for a moment."

A typical task for a design engineer is to find information pages on a single subject and read it. A computer-assisted design team is a natural spin-off of a design team where computer-aided design is used extensively. A major step can be automated on the system. The following approach is chosen as it found more and captures more information faster. It uses a small 30 lines text editor and a 100 lines text editor. It

[illegible]

Others are subject to control or can be moved around the map, to suit the requirements of the route.

A single page may be enough to announce that the writer has come to the page, but taking it too far and buried it, that is, in other magazines and advertising, does not mean a state of paper and you'll want to look about something in an advertisement. The *Yellow Tide Show* and the *Yellow Tide Show* are the only ones.

The number of pages you can turn, words limited to the 21.24 members, but some of the local sequences, in fact, recorded in the page you can record the whole sequence in two or three, without installing the package will work with both 4.0b, and between values.

The first implementation of the algorithm is well suited to access the whole text and can be adapted to a linked page structure, as on the WWW. For this, the text is split into blocks between 1/3 second and 1/3 minutes when the sequence continues. Its function is to find a suitable block in the index to which a new page, similar to the old one, could be added and the process is a cycle.

The Vintage Tote Shop is actually little more than a plastic package with inside information (and a few added editorial bits) it could be, and when you're done, waiting for

**Products:**  
 Purple Patch Park, cheap Rappahannock R.V. rental camp, 100  
 Colonial Hwy. Colonial Heights, Va. 22551-11, Midstate Camp

# ROM Blow

*Feel the burn as Datel's professional DIY cartridge system*

*By Eric Dayle*

**D**atel's ROMs really are as rugged as other silicon manufacturers getting credit in close competition with Everdram, Macron. As their product name indicates, Datel is including parts of the Commodore system which most could not or reach the cartridge port.

The Datel Eprommer 64, armorer is growing daily but the main drawbacks of their cartridge system are the Eprommer 64, the Cartridge Development System, the 16K 1 EPROM Board and Five Was Kernal Expander.

Before assembling a cartridge you need a programmed chip to put into it. EPROMs are identical to the ROMs already made for the Commodore but they repeat an EPROM can be erased and reprogrammed. Datel's Eprommer 64 is linked to the Commodore and provides all you need to transfer your program from memory to chip.

EPROMs have a code number which reveals their memory size. Most code starts with 27 and the next three or four characters reveal their memory size, multiplied by eight. For example, a 2K EPROM would have a value of 2716 or 16 therefore its code would be 2716. The coding leads to a lot of including, advertising, where 2716 chips are referred to as 16K, approximately 16 kilobits through to 256K chips which are really only 128K.

Eprommer 64 is supplied with an I/O software which controls the hardware, through the user ports. The latest chip which the system can handle is the 27256 (128K) which is equal about to half of the Commodore's memory.

Before you start getting too excited about this, let me explain that the software in space a cartridge system can



access easily is a block of 16K. Furthermore, because the Commodore cartridge system is designed to accept 16K chips, a 16K chip can only be accessed as two 8K blocks; this means that two 8K programmers can be used in one cartridge. There is also a dual 16K cartridge but I'll leave it to the user.

Before you can use the Eprommer effectively you have to purchase the contents of one of the word documents written in computer format. Commodore treat their cartridge system like a trade secret and the word states, it is every user's answer to a Black Hole: we know things go in but the where, how and

why of what happens next form part of the greatest secret known to man.

Fortunately Datel have supplied the answers and their 20 page manual lays bare the inner secrets of the cartridge operating system.

What it boils down to is that the system can be tricked into thinking that your cartridge is a normal part of Commodore's occupying hardware (27256-27271). When the computer powers up among other things it does a test to find if the code CBMD6 is stored at location 18000. This is the selection key and causes the normal reset routine to abort as far as the cartridge and a jump is made to a vector pointed to by 18000-18010.

The user program can only store in cartridge space unless it wishes to interrupt chips with transfer and execute in normal RAM space.

Obviously, this means a certain number of instructions will have to be made to copy program before loading up your EPROM. David's Epprommer software allows for this by including a monitor as well as the built-in copy/transfer chip loader.

## Here, keys

Once prepared, the programming of the chip is child's play. The computer displays a menu and using single key presses the parameters for the operation to set.

First of all the type of EPROM is selected by scanning through all five alternatives from 2716 to 2732. This also allows the display to the most commonly used voltage, and speed for the burn. Before proceeding it is important to check that the voltage is not too high for the chip you're using otherwise, permanent damage will be caused. If the voltage or speed is wrong it can be changed independently by cycling through the alternatives using the relevant key.

My sample EPROM, part of the Cartridge System kit, was rated at about half the voltage automatically suggested by the program. Perhaps it would have been better if David had set all the voltages to the low 12.5 volts and let the user increase this as necessary.

There are three programming speeds between 1 and 50ms. This is too fast for some chips, this is more usual and 50ms is only used for older 2716 and 2732 EPROMs.

Normally the program to be transfer will be stored in RAM but occasionally you may want to back up a kernel chip. Selecting ROM using the enter key switches on the ROM chip mode, for loading.

Today's chips can have such large memories that you may want to program in 1K blocks. An ALL or RANGE toggle is provided for this purpose. When set to ALL, the whole chip will be programmed but on RANGE it depends on which range has been set.

To set a range requires the maximum of thought. All you need to know is where your program starts its memory, its length and where it will



start of the EPROM. Remember that the location of the program in memory at first time need not bear any relationship to its eventual location in memory at run time. All this is stored under cartridge program control later.

The start and length of the program are easily entered via seven hexadecimal. Which David's programmer has tied on his board for easy use to add a hexadecimal calculator to the menu screen.

The EPROM position is correctly worked out. The first program portion at location 5000 and subsequent programs normally go on at 8K intervals. 1K is 5400 bytes therefore the second program will start at 5900. Several DOS operations also appear on the screen: directory display, disk commands loading and saving. These are supplemented by a HIF command which gives a complete list of all memory locations within the limits set on the program tape.

The remaining commands are the really important EPROM commands. First, you can check if the chip is blank. If not you must follow the normal procedure to wipe the memory using ultra-violet radiation for EPROMs or the specially included erase function for EEPROMs.

The next step is to write your program to the chip (obviously and then verify it against the RAM version).

For those doubting Thomas who want further confirmation, you can also read the EPROM into memory again. This can be useful when you want to back up a commercial EPROM with

the program into memory, and blow it out onto your disk.

## A in Cart

Now you have your Epprommer and the cartridge production kit, the Cartridge Development System is ready to blow 1Ks, EPROMs and all the boards and components full lots of cheap programs to set up your board. A test result is already listed next to a switch to allow the selection of which part of the 1K EPROM you are using. The supplied cartridge system has two switches through which the switches will protect.

Also included in the package is a full 20 page explanation of cartridge theory and assembly. With a minimum of soldering ability, most people will be able to produce professional-looking cartridges.

The other cartridge, contains the 1Ks EPROM Board can hold two 27128s, which may be switched into memory at 10000 and 14000 giving 1Ks of nonvolatile RAM disk from each chip. As with the single chip version the other halves of the two chips can be used to store another 1Ks program.

The only problems I had with the system were difficulties related to cartridge assembly. Firstly, an experienced programmer may not be very knowledgeable about this matter. To fit a cartridge does require an electrical knowledge but it is a little help if the instructions pointed out the way to find which way round a chip should be fitted into the cartridge.

After fitting the chips your problems are not over the currently typed CPU, which which hold the EPROM is too thick. Putting the two halves of the cartridge together thus is a job around the edges which, although small, deposits them the professional look of the product.

A final point, concerning the 1Ks Board only is that the bank selection on the dual chip cartridge is internal. Cartrons, the two wants to switch from one program to the other the cartridge has to be removed, opened, switched and then closed.

With the minimum of two or three hours' backed up RAM cartridges (Smart Card in David's catalogue), the question must be asked: Will this help with learning what Smart Cards are, or cheap?





The rest of a System 64 costs \$32.99 for an 8K card, but a Upgrade II, 128K system costs a mere \$122.99. But you have the added expense of \$49.99 for the Expansion Board. The dilemma being that the System actually has two 8K programs and was not, like the majority of hardware replacement or luxury, if you only can wait, long, two or three, upgrade the System Card is good enough. It was our forced a need for dozens of cartridges and extra 8K cards, then an EPROM system is just an option.

## ROM Banking

Diad also has other interesting products which look in with the Expansion 64. Take the First Win Karalid Expansion for example, Karalid replace your Karalid ROM with a better and you can plug this board in and with your ROM Banking is on either side is a pair of 16K EPROM sockets which allow you to add four more 8K operating systems. Using the supplied switch to select the chip you want you can power up into an operating system at your own making.

Each month when I see these adverts, Diad's range seems to have grown. The Expansion 64, Cardridge System and Karalid Board in superbly constructed enclosures, easy to use, and with 16K EPROMS costing less than a fiver, the cost of producing your own cartridge compares in cost with that of commercially produced ones. With motherboard, separate boards and cartridges already in Diad's back-catalogue.



how much longer you think you can delay EPROM programming.

## Finalists

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# Bulletin Boards

*Continuing our computer communications series, this month we look at the various uses of bulletin boards.*

*By Jennifer Goldsmith*

Generally speaking, a bulletin board is an electronic noticeboard, which permits two-way communication. This means that the user can obtain information and contribute to the system. It differs from a conferencing system in as much as there are no closed user groups (CUGs) and there are no individual conferences, which are separate currents with different people organising each conference.

Conferencing systems are usually run by commercial organisations and the subject matter is very diverse. Whereas bulletin boards are usually, but not always, run by the hobbyist, but the subject matter is usually specialised in as much as the topics are related to a specific hobby or interest, eg PCs, Commodore Computers, Hewlett-Roberts etc.

## How do Bulletin Boards Work

Basically, there are two different ways in which they work. Either you phone

them and when the modem answers, you connect your modem to the appropriate number for your software, and there you log on. Or after you phone the bulletin board, you hang up and the bulletin board's modem phones you back. This latter type of logging on is not as common as it is more expensive to implement, but it does give greater security. If you go to log on to a bulletin board after having used a commercial system like Prestel you may find the bulletin board unfriendly.

Fourth, what is required differs from system to system but you will find that often your name is required followed by a message which is brief. Never ever divulge your Password or password or any password on any other system (unless, everything is lost and you have nothing to lose by doing so!).

Some bulletin boards, especially those whose software originated in the USA, operate at 300/300 baud (writing). However, with the growth in

popularity in the UK, of modems and various wave software, has been written for bulletin boards, using the Serial or colour and 1200/1200 baud. Therefore as mentioned in the October issue, you have to make sure that you have the appropriate software and that the modem and software are compatible.

## Growing in Popularity

One of the reasons why bulletin boards have become popular is that you can set them up. For example a Commodisk drive, autonomous modem and bulletin board software for the Commodore 64, which is available from E-Computing, is all you need.

However, some of the popular boards have a hard disk attached. This allows an infinite or quasi-infinite operation and allows much information to be available to the user. For example with a 1MB only, couple of hundred or so messages in use, of modems compatible boards

could be stored but entries might lack the immediacy of a message (could be stored and/or made instantaneous, as well). Therefore, bulletin boards are not such a expensive to set up but they are also hard work.

For this reason, you will find that access to some bulletin boards is restricted to certain hours only. Not others are available 24 hours. No-one can give you hard and fast rules when it comes to bulletin boards as there are about 300 in the UK, thousands in the USA, and the number is on the increase.

You may have difficulty in covering popular boards as many people are using simultaneously and there is usually only one phone line, which means of course that only one person can use the system at any given time. You must be aware of what time you are using a bulletin board so that you maintain the time you are online in order to let others on the system.

## Listings of Bulletin Boards

It would be very difficult and superfluous for me to provide a complete listing of bulletin boards in the UK. There are various sources for this. Firstly the Bulletin Boards Operators Association, which is an association in which system operators co-operate in helping. This information is also supplied to Clublog, an Postal. However, these sources of lists are not currently available as unfortunately they were destroyed in a fire, and are in the process of being re-computed at the moment.

The other source of lists is the magazine *Telelink*, which comes out at times a year. It is a magazine mainly devoted to communications in the UK and at £15 for two years subscription it is a MUST. Just contact Distributor Publications at Postal Miles (01640) or on Telecom Guild 71 MAGDOT and credit cards are an acceptable means of payment.

## Finding Your Way About

There is no one way of knowing what bulletin boards have what information. Either you get information from your friends and relatives or you just phone around. Never to get too phony. Here is a brief description of some of them.

Magdot 1, at £15, is responsibility for any errors or omissions.

The first one I would like to mention is a fairly new board based in Wokingham telephone number 0942 743137 (it used to be 0942 but I am not sure). What is unique is that, for my knowledge it is entirely devoted to Commodore users covering all machines including the Amiga. There is an increasing amount of information it available 24 hours on both 900/900 and 1200/1200 modems.

The next bulletin board is devoted purely to a hobby. In this case it is Amateur Radio. The Radio Society of Great Britain runs a bulletin board (tel 0007 52041) which is available 24 hours on 1200/1200 baud variable format. Normally only one phone line is available but I believe it is hoped that two lines will be in use before long.

This bulletin board has a fairly large database on various aspects of amateur radio, including band plans, diary of events, tables and contents information on more topics and the radio amateur examination (sat) series from both home and abroad, packet radio, solar propagation, club information and news, RAYNET, registers and licenses, boards and other products which can be purchased from RSGB. RSGB services watches and information for beginners.

In addition to this there are response frames for receiving books etc. by credit cards for obtaining information and you can write your own message as well. Unlike most boards, it is updated most working days at a full-time editor/database manager is employed.

The Queens at Home is a very popular board which supports at phone lines 24 hours a day. Two of these phone lines are for the general public, the other two are kept for the paying subscribers. Subscription is very cheap and only costs £1.20 a month which is well worth while just to be able to access the board most readily. The two lines for the public are on 09-025 18994 at 1200/1200 baud using standard compatible software.

The London Underground bulletin board is available 24 hours on 01-463 1499 on 300/300, 1200/1200 and 1200 full duplex and has about 4000 entries a day. This is quite good, but I believe RSGB has between 14-37 entries a day. However this bulletin board runs on a

PC whereas RSGB's database runs a BBC. Both make use of a hard disk as does the Commodore one which also uses a PC disk.

There are two 81988 boards BA988 made for British Apple Bulletin Board System. They run on 300 baud, are sponsored by BA91AG. British Apple systems User Group are available 24 hours a day on 0194 376466 and 0340 779934.

Robert O'Donnell's bulletin board is Manchester was the first bulletin board to use a BBC micro and earlier Robert has worked for a few computer companies and has even written his own communication software. His board covers most interests - advertising BBC software, plans and advice events. No wonder Macromat are currently employing him! Rob's board is available 24 hours on 300 baud on 061-427 1396.

Loan Hard, who is the wisp for the Commodore Hope bulletin board in Perth, Wales was most probably the first female wisp in the UK. There are currently only about three of four female wisps on the UK (as over 300 boards!).

One important point is that in order to access the board you do NOT have to be using the same computer as the one which is running the board. For example a BBC may be running the RSGB board but any computer which has suitable compatible software using 1200/1200 will be able to access it.

## Accessing Boards in America

The bulletin board industry in America is unlike our British counterpart very oppressed. Most states operate on what is known as Bell frequencies. The UK (CCITT) does not work on the USA (Bell) standard. Therefore your modem will have to be able to cope with the Bell frequencies. The bell frequencies in Ham, are Bell 201 (300 baud) or Omega (maxime 1070-981 1270-12) - maxime 3025 (9) 3025 (9). Bell 201 (1200 baud) maxime and maxime 3200 (1) 3200 (1).

This is both duplex and is the same as our 1200 full duplex. However the 300 baud is not the same as the British 300 baud.

Once you have overcome the problem of the Bell versus your own problem will be for logging on. As





# Number Tumble

*A frustrating game for two players*

*By John Phillips*

**T**he basic idea of the game is that a 7x4 grid of numbers between one and five is presented. Player one can move a single one one place up or down (with a wrap-around effect) to produce either a winning sequence of 1,2,3,4,5 reading up, down, left or right, or to produce a losing sequence of 1,4,4 or 5 identical numbers in a line (up or down). Player two (or C64 if an one player mode) then has to move a row one place backwards or forwards with the same aim.

The winner is the first to produce either a 1,2,3,4,5 sequence or the first to create a large differential in points which will remove the opponent's last marker from the bottom of the screen. Both methods result in a 100 points bonus.

To add to the fun, after all 1,4 and 5 number winning sequences at least two of the numbers are changed by one count in either direction. Therefore, one session changes but they are implemented exactly fully in the program.

In 1 player mode a pre-selected level of 1 to 5 gives the computer 20% to 100% chance of achieving the highest obtainable score for an turn but will always display a 1,2,3,4,5 sequence if one is available. The higher the level, the longer the time the computer needs to respond but this is indicated on screen so a countdown timer.



DIFF (from the random value used) the number grid the game is totally logical and requires careful thought. Games may last a couple of minutes to half an hour or more, depending on skill level between players or the level selected.

## Getting it in

The program is presented in two parts: the first contains all the data for all sequences and UID-64 and also the scoring character sets. The DATA LOADER must be typed and saved

before the Number Tumble program.

A word of warning: program has also been gained because if RUN/STOP and RESET/GO buttons are used after running the main program the screen blanks and no typing can be seen. This is due to the banks screen, and characters having been shifted around.

Type RUN 10000 (even though we can't see it) and the computer will return to normal after RETURN has been pressed. This add-on program proved useful during development of the game and more similarly help with debugging future games.

See Listings on page 117



# Software for Sale

*If you think that one of our programmers looks like an over-energetic, but you can't afford the time to type it in then our software service will help you out*

**I**t's three o'clock in the morning. You sit at the computer keyboard and finished a more than typewritten version entering one of the experts programmes from Your Commodore. Your fingers reach for the keyboard and press the letters R, U and N. You press RETURN, sit back and nothing happens.

Everyone has probably faced this problem. When it does happen it's a matter of spending hours searching through the program for any typing mistakes. No matter how long you look at how many people help you, you can usually guarantee that at least one telling sign through unnoticed.

The Your Commodore Software Service makes available all of the programmes from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programmes is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

INFOMET LTD 3 River Park Estate, Borkhamstead  
Herts SG4 1HL  
TEL (0447) 7651/4

please contact this address for prices and availability

## The Disk

Programmes on the disk will also be supplied in totally working versions, i.e. when possible we will not use Basic. Readers taking one of the programmes must enter Unfortunately at the moment we cannot duplicate C1's and Plus/4 versions. However programmes for these machines will be available on the disk.

What programmes are available?

At the top of each article you will find a strip containing the article type, C64 Program etc. So that you can see which programmes are available in which format you will also find a couple of symbols after the strip. The symbols have the following meaning:



This symbol means that the program is available on cassette



These programs are available on disk

## Please Note

Since the programs supplied on cassette are total working versions of the programs, we do not put disk only programmes on tape. There is no point in placing a program that expects to be reading from disk on to tape.

## JUNE 1987

**DUAL PROGRAMMING** Have two programmes in your Plus/4's memory at once. £6 on disk with 2

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**LIST ENHANCER** - Improve the LIST command of your C64

**UNLISTER** - A machine code debugger for the C12

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**DISK 1001/87 £6.00**

**TAPE 1001/87 £4.00**

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**UTILITY COMMANDS** - This provides many total commands missing from Basic 2.0 and the 128

**PULL-4 AND C44 RUNTIME** - Speed up your programmes with these handy utilities

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**ARCADE ACTION** - Fill up those sprites with these handy arcade routines on the C64

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# AUGUST 1987

- DISKET 6** — Fast file system for disk users (C64 + disk only)
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- SCREEN DUMP** — A Hi-Res screen dump for the C64 plus M5500 printer
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- CHESSPIKE** — Does your C16 lack something? Then add spirit to this excellent one. For C64 and Plus/4 available on disk only
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Order Codes  
**DISK YDAUG87 06.00**  
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- DISKET 7** — Copy user disk programmes to turbo tape with ease (C64 + disk only)
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- Window Saving** — 17% increasing productivity, C14s ROMs for storage
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- File Kit** — Program protection for C64 owners

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Coveries or disks are available from March 1988. Please ring the editorial office (01-471-0026) for details of these.

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# Communications Corner

*David Janda is back with more news and views from the communications world*

**I**N AN UNEXPECTED move, major tariff changes for the Telecom Gold system were made in early August. The good news is that the peak rate time charge is now 8 1/2¢ per minute, down from 11¢, and that the off-peak rate is now 5¢, down from 7 1/2¢. The bad news is that Telecom Gold has imposed a \$3 per month subscription fee on every subscriber.

But by far the most controversial change is a new tariff for data transfer. Each block of 312 characters sent to or from Telecom Gold will cost the user 4¢ at peak time and 1¢ off-peak - with the first 312 characters free. This means that a 1000 word document will cost a single user 4¢ at peak time or 1¢ off-peak to read or send.

The new tariff structure will affect all users across the board, especially domestic users, as they will not be able to offset the cost of using Telecom Gold as a company expense. Further domestic users tend to make extensive use of access to Gold that rely on sending/receiving text such as time-share users, and on system T2 which is operated by Microlink - the bulletin board facility.

Across the board, the new pricing structure has changed Telecom Gold from being one of the most cost-effective databases to one of the most expensive. For example, a user wishing to subscribe one of the on-line information services such as FinTech

will have to pay the information provider a base charge for accessing the database as well as the connect charge and the data transfer charge imposed by Telecom Gold. Worse still, when accessing Gold via FSS also have to pay a data transfer charge on top of that. Add to all this the cost of the phone call to your local FSS node/Gold port and the cost begins to add up!

## Microsoft Goes for Gold

However, there are ways to avoid the \$3 subscription fee and the cost of long distance phone calls, and you still have access to all the features of Telecom Gold - by simply joining Microsoft.

Interlink is the name of a 'gateway' that enables Microsoft subscribers to be connected through to Telecom Gold. From within Microsoft the user goes to the Interlink Press page (\*40/999999 or \*INTERLINK ) and presses '1' to make the connection. Once this is done, the user logs on by calling system T4, enters their ID and password, and is through to Telecom Gold. Some clever software converts Gold's 80-column format to 40 columns that's required by Press! At the end of each frame the user is prompted to press RETURN; the screen will then clear and once two, if one, will follow.

To use Interlink, Microsoft subscribers must first register online. Once done, you will be provided with your own Telecom Gold number which you can access through Interlink, or by accessing Telecom Gold directly; there is no registration fee and Interlink members do not have to pay the \$3 subscription fee each month. There is a charge of 1¢ per minute for using the gateway, but when you take into account local call access for Press!/Microsoft subscribers and the waiving of the \$3 subscription for accessing Telecom Gold via Interlink it's very cost effective. Consider the following subscription charges for a period of one year:

Telecom Gold	\$36
Press!	\$18
Microsoft/Press!	\$66

Subscribing to Telecom Gold and Press! will cost \$54 per year, yet subscribing to Microsoft (which also doesn't subscribe to Press!) as Microsoft is an information provider on the Press! database will get you all three services for \$66 - and that is exceptional value for money.

According to Microsoft's PR manager, David Reinbaum, Press! are currently developing an 80 column gateway which can be used within Press!/Microsoft, and that Microsoft have made a major

development is central shell facilities. Full details on both areas next month.

### CompuNet Changes

SEVERAL MAJOR CHANGES have happened at CompuNet over the last few months. First, CompuNet has 'moved' the whole database onto their new 'mainframe' computer. Previously the service was run on a DEC 10 mainframe computer which was a dating/timing system. The result was slow login times, slow page access, slow everything. However, with their new mainframe which consists of a series of 68000 microprocessors, things should be speeded up. New applications software has been written in C, and single processors are allocated to individual tasks such as updating the directory.

There should be several benefits to the subscriber as a result of the move. First is speed - the time taken to move through the database should be improved dramatically. Capacity will be doubled allowing more people to

subscribe. Facilities such as the multi-user games (MUG) Federation is now available and may soon be followed by Gads including MUD, this would bring the number of MUGs to three on the system. CompuNet also intend to cater for racers other than the Commodore in the near future. The BBC memo was to have been the first of these matters but the plan to move immediately this month was abandoned earlier this year.

Finally, the cost of using CompuNet has gone down - well, not of Previews, a subscriber could access CompuNet by calling one of several numbers that were scattered around the country. These five numbers have been ungrouped and everyone must access the service through the local network. Peak prices have gone down to 1p per minute and the cost of accessing CompuNet during peak hours has gone down to 60p per hour for London users and 84p for all other users.

Gold subscribers can take out a quarterly subscription of 13.45 (inc

VAT) to cover off peak access charges.

Obviously the price reductions are a move in the right direction. But what seems unfair is the reduction of the free phone numbers.

### Snappit

The cost of accessing CompuNet at the evening requires a local phone call to an local port during the off-peak period and the local charge (the total is £1.84 per hour (inc VAT) on the phone call). Answering Machines in the evening, requires a local call to a Portel port in the off-peak period (this costs 60p per hour (inc VAT)). There is no charge for using the Portel network.

**Twinkl**  
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Please allow 21 days for delivery. This offer is available to readers in U.K. only. Overseas enquiries in writing to the above address.

# Adventure Kit II

*Continuing our adventure writing series, this month we look at everything you need to know about the new*

*By Allen Webb*

**T**his month I will deal with the text, the life-blood of adventures. Since text is RAM hungry, this section will utilize the unused RAM locations below the BASICs. The actual code is quite small but it needs four tables occupying 16K in order to print text, so need to know two things. First we need the start address of the text and secondly some way of knowing when the text ends.

In this case I will use a zero-byte as a sentinel to mark the end of each piece of text. Since only single indexed addressing is used, each line of text is limited to 256 bytes. The actual text is stored in an uninterpreted form to allow you the full use of characters and control codes. If you want to use compressed storage, refer to my article in *Your Commodore* (September 1987) which covers it.

## How the Code works

Before I describe the editor for this system, I will give some detail on how the code works. For those of you who want to write their own editor. The syntax for the code is:

```
ST5 31964 BANK MESSAGE NO,LINE
```

Bank refers to the block of RAM concerned and has the values  
0 = area below the BASIC ROM

between 40960 (\$A000) and 49152 (\$BFFF)

1 = area below the Kernal ROM between 80040 (\$B000) and 80310 (\$FFFF)

This gives a total of about 16K for text.

MESSAGE NO is a self-explanatory and has the value between 0 and 157. The editor translates the table values to zero. If you try to call a non-existent message the zero bytes are detected and you get a flashing border to warn you of your error. The editor does not, however, terminate execution of your BASIC program.

LINE refers the starting line for the message. The normal scrolling as occurs with PRINT will be avoided.

The editors used by the code are as follows:

80900-80BFF main code  
80C00-80CFF low byte table for BASIC ROM area

80C00-80CFF main code  
80C00-80CFF low byte table for BASIC ROM area

80D00-80DFF high byte table for BASIC ROM area

80E00-80EFF low byte table for KERNAL ROM area

80F00-80FFF high byte table for KERNAL ROM area

The start addresses of each message are kept in the above tables. For example, the low byte (LB) of the start address of message 1 under the BASIC ROM is held in location 80C01 (\$0C01). Similarly, the high byte (HB) is in 80D01. The start address of the message is then given by:

Address = HB x 256 + LB

The editor gives errors rather disproportionately large for the code it writes. In fact, reasons for many month machine code are simple. Any text editor written in BASIC will be sluggish and the other operations involved will give an unworkable program. The main editor is called on a short loop of BASIC. It is driven by a main menu screen which also gives help and shows the current memory usage in each bank.

The two memory banks are handled separately and you can only work on one at a time. You can toggle between them by pressing F1, and the levels entered will change accordingly. This option is selected from the main menu only. The frequent actions, such as translation and text entry will not be correct bank.





# Listings

*Get it right first time with our delete program system  
for the C64.*

**Y**ou will have noticed that our listings are free of those horrible little black blocks which send you searching around the keyboard for a variable graphic symbol. You may also have noticed the fancy, random fix to the side of each line of the listing. First no more is it all part of our care and

Instead of those messy graphics and rows of random spaces in PRINT statements and strings we use a special coding system. The code, an acronym, is always contained in square brackets and will soon learn to decipher their meanings.

For example, [SA] would mean right on a Shifted A, or an any of spaces in lexicon's error, and [SAB] would mean a row of six of these symbols.

[S+Z] means hold down the shift key and press the plus key twice. It doesn't take a great leap of logic to realise that [C+Z] means exactly the same thing except that the Commodore key (bottom left of the keyboard) is held down instead of the shift key.

Often that two-space apparatus is mistaken then this will be proved as [SPC4] or, exceptionally, [SPPC4]. Translated into English this means press the spacebar four times or so the later can hold the shift key down while you do it.

A string of special characters could appear as [CTRL N DOWN2 LEFTS BLUE, TSC2].

This would be achieved by holding

down the CTRL key as you press N, press the cursor key down twice, the reverse left key five times, press the key marked B1 (U) while holding down the CTRL key, press the F1 key and finally hold the Commodore key down while pressing the number two key (C2) would of course make the computer go to a screen.

Always remember that you should only have a row of graphics characters on your screen with consequent brackets and no, except, unless something like this appears: [S&] (C\*)

In this case the two characters should have a column between them.

On rare occasions [REV T] will appear as a listing. This is a delete symbol and is created by, moving the key up to the screen. There type a closing quotation mark ([SHIFT & 2]) and delete it. This puts the computer out of quote mode. Hold down CTRL, and press the number nine key ([NINE]) type the relevant number of reversed Ts and then hold down CTRL and press zero ([REV0FF]). Now type another quotation mark and delete it again. Now finish the line and press RETURN.

A lot of these special cases appear in the table but remember that only one of these parentheses will appear outside of a PRINT using the symbol for go. This may appear where an value is needed in a calculation so this may look something like

CC=27[TH]\*R  
Ignore the square brackets, and read right as a shifted upward pointing arrow (ie the go symbol).

FROM	TO	FROM	TO
0	0000	0000	0000
1	0001	0001	0001
2	0002	0002	0002
3	0003	0003	0003
4	0004	0004	0004
5	0005	0005	0005
6	0006	0006	0006
7	0007	0007	0007
8	0008	0008	0008
9	0009	0009	0009
10	0010	0010	0010
11	0011	0011	0011
12	0012	0012	0012
13	0013	0013	0013
14	0014	0014	0014
15	0015	0015	0015
16	0016	0016	0016
17	0017	0017	0017
18	0018	0018	0018
19	0019	0019	0019
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41	0041	0041	0041
42	0042	0042	0042
43	0043	0043	0043
44	0044	0044	0044
45	0045	0045	0045
46	0046	0046	0046
47	0047	0047	0047
48	0048	0048	0048
49	0049	0049	0049
50	0050	0050	0050
51	0051	0051	0051
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65	0065	0065	0065
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67	0067	0067	0067
68	0068	0068	0068
69	0069	0069	0069
70	0070	0070	0070
71	0071	0071	0071
72	0072	0072	0072
73	0073	0073	0073
74	0074	0074	0074
75	0075	0075	0075
76	0076	0076	0076
77	0077	0077	0077
78	0078	0078	0078
79	0079	0079	0079
80	0080	0080	0080
81	0081	0081	0081
82	0082	0082	0082
83	0083	0083	0083
84	0084	0084	0084
85	0085	0085	0085
86	0086	0086	0086
87	0087	0087	0087
88	0088	0088	0088
89	0089	0089	0089
90	0090	0090	0090
91	0091	0091	0091
92	0092	0092	0092
93	0093	0093	0093
94	0094	0094	0094
95	0095	0095	0095
96	0096	0096	0096
97	0097	0097	0097
98	0098	0098	0098
99	0099	0099	0099

by Eric Doyle



## Checksum Program

The hexadecimal numbers appearing at a column to the left of the listing should not be typed in with the program. These are merely checksum values and are there to help you get each line right. (Don't worry, if you don't understand the hexadecimal system, at least as you can compare two characters on the screen with the corresponding two characters in the magazine you can see our line checking program.)

Type in the Checksum Program, make sure that you've not made any mistakes and save it to tape or disk

immediately, because it will be used with most of the programs and listings, listings appearing in *Your Commodore*.

At the start of each programming session, load Checksum and run it. The screen will turn brown with yellow characters and each time you type in a line and press the RETURN key, a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.

If the two values don't relate to one another, you have not copied the line exactly as printed so go back and check each character carefully. When you find the error simply correct it and

press RETURN again.

If you want to turn off the checker simply type 85540(0) and the screen will return to the familiar black screen. You can then do whatever it was you wanted to do and if this doesn't use the area where Checksum lives you can go back to it with the same 855 command.

## Lower Case

Many of the listings are presented in lower case. To turn your computer to lower case mode, press the Commodore key and the SHIFT key at the same time.

☺

### Marmonic Symbol Keypress

[RIGHT]		CRSR left/right
[LEFT]		SHIFT & CRSR left/right
[DOWN]		CRSR up/down
[UP]		SHIFT & CRSR up/down
[F1]		F key
[F2]		SHIFT & F key
[F3]		F key
[F4]		SHIFT & F key
[F5]		F key
[F6]		SHIFT & F key
[F7]		F key
[F8]		SHIFT & F key
[HOME]		CLR/HOME
[CLR]		SHIFT & CLR/HOME
[AYSON]		CTRL & 9
[RESDPT]		CTRL & 9

### Marmonic Symbol Keypress

[BLACK]		CTRL & 1
[WHITE]		CTRL & 2
[RED]		CTRL & 3
[CYAN]		CTRL & 4
[PURPLE]		CTRL & 5
[GREEN]		CTRL & 6
[BLUE]		CTRL & 7
[YELLOW]		CTRL & 8
[POUND]		!
[LARGE]		--
[UP/ARROW]		↑
[P1]		SHIFT & 1
[P87]		SHIFT & INST/DEL
[REV T]		screen
[Clear]		CMD + letter
[Shift]		SHIFT + letter

[illegible]



## LISTINGS

60	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73
74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
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00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36					

[illegible]

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398</
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# LISTINGS

60	2400 DATED 1971 1 100 100 1	70	2400 DATED 1971 1 100 100 1	80	2400 DATED 1971 1 100 100 1
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62	2400 DATED 1971 1 100 100 1	72	2400 DATED 1971 1 100 100 1	82	2400 DATED 1971 1 100 100 1
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66	2400 DATED 1971 1 100 100 1	76	2400 DATED 1971 1 100 100 1	86	2400 DATED 1971 1 100 100 1
67	2400 DATED 1971 1 100 100 1	77	2400 DATED 1971 1 100 100 1	87	2400 DATED 1971 1 100 100 1
68	2400 DATED 1971 1 100 100 1	78	2400 DATED 1971 1 100 100 1	88	2400 DATED 1971 1 100 100 1
69	2400 DATED 1971 1 100 100 1	79	2400 DATED 1971 1 100 100 1	89	2400 DATED 1971 1 100 100 1
90	2400 DATED 1971 1 100 100 1	91	2400 DATED 1971 1 100 100 1	92	2400 DATED 1971 1 100 100 1
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96	2400 DATED 1971 1 100 100 1	97	2400 DATED 1971 1 100 100 1	98	2400 DATED 1971 1 100 100 1
99	2400 DATED 1971 1 100 100 1	100	2400 DATED 1971 1 100 100 1		



## LISTINGS

## REMARKS TO THE READER

Please refer to Listings before  
listing an advertisement.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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14 PRINT (CLEAR;DOWN
(DOWN;LDA D +CHRN;N)
-NUMBERTUNEL;L +CHRN;N
+ F;PRN;T;DOWN;DOWN
(DOWN;DOWN;DOWN;DOWN
RUN;END)

```

100% 100% 100% 100%

[illegible]



## LISTINGS

[illegible]

## LISTINGS

[illegible]



## LISTINGS

[illegible]

## FUNCTION KEY TEMPLATE

Please refer to Listings before  
typing in new programs

## FUNCTION KEY KEY

FUNCTION KEY TEMPLATE	
Please refer to Listings before typing in new programs	
PROGRAM	FILE KEY
38 1 COTER	39 1 COTER
40 1 COTER	41 1 COTER
42 1 COTER	43 1 COTER
44 1 COTER	45 1 COTER
46 1 COTER	47 1 COTER
48 1 COTER	49 1 COTER
50 1 COTER	51 1 COTER
52 1 COTER	53 1 COTER
54 1 COTER	55 1 COTER
56 1 COTER	57 1 COTER
58 1 COTER	59 1 COTER
60 1 COTER	61 1 COTER
62 1 COTER	63 1 COTER
64 1 COTER	65 1 COTER
66 1 COTER	67 1 COTER
68 1 COTER	69 1 COTER
70 1 COTER	71 1 COTER
72 1 COTER	73 1 COTER
74 1 COTER	75 1 COTER
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78 1 COTER	79 1 COTER
80 1 COTER	81 1 COTER
82 1 COTER	83 1 COTER
84 1 COTER	85 1 COTER
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108 1 COTER	109 1 COTER
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114 1 COTER	115 1 COTER
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196 1 COTER	197 1 COTER
198 1 COTER	199 1 COTER
200 1 COTER	201 1 COTER

50 1000 PRINT#4 EPOCH	58 1700 PRINT #100 -PRINT#1000	66 1000 PRINT #100 -PRINT#1000
52 1000 PRINT#4 0 100 -100	60 1000 PRINT #100 -PRINT#1000	68 1000 PRINT #100 -PRINT#1000
54 1000 PRINT#4 0 100 -100	62 1000 PRINT #100 -PRINT#1000	70 1000 PRINT #100 -PRINT#1000
56 1000 PRINT#4 0 100 -100	64 1000 PRINT #100 -PRINT#1000	72 1000 PRINT #100 -PRINT#1000
58 1000 PRINT#4 0 100 -100	66 1000 PRINT #100 -PRINT#1000	74 1000 PRINT #100 -PRINT#1000
60 1000 PRINT#4 0 100 -100	68 1000 PRINT #100 -PRINT#1000	76 1000 PRINT #100 -PRINT#1000
62 1000 PRINT#4 0 100 -100	70 1000 PRINT #100 -PRINT#1000	78 1000 PRINT #100 -PRINT#1000
64 1000 PRINT#4 0 100 -100	72 1000 PRINT #100 -PRINT#1000	80 1000 PRINT #100 -PRINT#1000
66 1000 PRINT#4 0 100 -100	74 1000 PRINT #100 -PRINT#1000	82 1000 PRINT #100 -PRINT#1000
68 1000 PRINT#4 0 100 -100	76 1000 PRINT #100 -PRINT#1000	84 1000 PRINT #100 -PRINT#1000
70 1000 PRINT#4 0 100 -100	78 1000 PRINT #100 -PRINT#1000	86 1000 PRINT #100 -PRINT#1000
72 1000 PRINT#4 0 100 -100	80 1000 PRINT #100 -PRINT#1000	88 1000 PRINT #100 -PRINT#1000
74 1000 PRINT#4 0 100 -100	82 1000 PRINT #100 -PRINT#1000	90 1000 PRINT #100 -PRINT#1000
76 1000 PRINT#4 0 100 -100	84 1000 PRINT #100 -PRINT#1000	92 1000 PRINT #100 -PRINT#1000
78 1000 PRINT#4 0 100 -100	86 1000 PRINT #100 -PRINT#1000	94 1000 PRINT #100 -PRINT#1000
80 1000 PRINT#4 0 100 -100	88 1000 PRINT #100 -PRINT#1000	96 1000 PRINT #100 -PRINT#1000
82 1000 PRINT#4 0 100 -100	90 1000 PRINT #100 -PRINT#1000	98 1000 PRINT #100 -PRINT#1000
84 1000 PRINT#4 0 100 -100	92 1000 PRINT #100 -PRINT#1000	100 1000 PRINT #100 -PRINT#1000
86 1000 PRINT#4 0 100 -100	94 1000 PRINT #100 -PRINT#1000	
88 1000 PRINT#4 0 100 -100	96 1000 PRINT #100 -PRINT#1000	
90 1000 PRINT#4 0 100 -100	98 1000 PRINT #100 -PRINT#1000	
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96 1000 PRINT#4 0 100 -100		
98 1000 PRINT#4 0 100 -100		
100 1000 PRINT#4 0 100 -100		

## PLUS/4 AND C16 DISK MENU

Please refer to Listings before  
typing in new programs

### PROGRAM DISK MENU

10 REM \*\*\*\*\*  
20 REM \*\*\*\*\*

30 REM \*\*\*\*\*  
40 REM \*\*\*\*\*

50 REM \*\*\*\*\*  
60 REM \*\*\*\*\*

70 REM \*\*\*\*\*  
80 REM \*\*\*\*\*

90 REM \*\*\*\*\*  
100 REM \*\*\*\*\*

110 REM \*\*\*\*\*  
120 REM \*\*\*\*\*

130 REM \*\*\*\*\*  
140 REM \*\*\*\*\*

150 REM \*\*\*\*\*  
160 REM \*\*\*\*\*

170 REM \*\*\*\*\*  
180 REM \*\*\*\*\*

190 REM \*\*\*\*\*  
200 REM \*\*\*\*\*

210 REM \*\*\*\*\*  
220 REM \*\*\*\*\*

230 REM \*\*\*\*\*  
240 REM \*\*\*\*\*

250 REM \*\*\*\*\*  
260 REM \*\*\*\*\*

270 REM \*\*\*\*\*  
280 REM \*\*\*\*\*

290 REM \*\*\*\*\*  
300 REM \*\*\*\*\*

## PLUS/4 AND C16 DISK MENU

Please refer to Listings before  
typing in new programs

### PROGRAM DISK MENU

10 REM \*\*\*\*\*  
20 REM \*\*\*\*\*

30 REM \*\*\*\*\*  
40 REM \*\*\*\*\*

50 REM \*\*\*\*\*  
60 REM \*\*\*\*\*

70 REM \*\*\*\*\*  
80 REM \*\*\*\*\*

90 REM \*\*\*\*\*  
100 REM \*\*\*\*\*

110 REM \*\*\*\*\*  
120 REM \*\*\*\*\*

130 REM \*\*\*\*\*  
140 REM \*\*\*\*\*

150 REM \*\*\*\*\*  
160 REM \*\*\*\*\*

170 REM \*\*\*\*\*  
180 REM \*\*\*\*\*

190 REM \*\*\*\*\*  
200 REM \*\*\*\*\*

210 REM \*\*\*\*\*  
220 REM \*\*\*\*\*

230 REM \*\*\*\*\*  
240 REM \*\*\*\*\*

250 REM \*\*\*\*\*  
260 REM \*\*\*\*\*

270 REM \*\*\*\*\*  
280 REM \*\*\*\*\*

290 REM \*\*\*\*\*  
300 REM \*\*\*\*\*

## PLUS/4 AND C16 DISK MENU

Please refer to Listings before  
typing in new programs

### PROGRAM DISK MENU

10 REM \*\*\*\*\*  
20 REM \*\*\*\*\*

30 REM \*\*\*\*\*  
40 REM \*\*\*\*\*

50 REM \*\*\*\*\*  
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70 REM \*\*\*\*\*  
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230 REM \*\*\*\*\*  
240 REM \*\*\*\*\*

250 REM \*\*\*\*\*  
260 REM \*\*\*\*\*

270 REM \*\*\*\*\*  
280 REM \*\*\*\*\*

290 REM \*\*\*\*\*  
300 REM \*\*\*\*\*

## COMMODORE 128 PREFERENCES

Please refer to Listings before  
typing in new programs

### PROGRAM LIST PREFERENCE

1. Press 1 to enter program name  
2. Press 2 to enter program name  
3. Press 3 to enter program name  
4. Press 4 to enter program name  
5. Press 5 to enter program name  
6. Press 6 to enter program name  
7. Press 7 to enter program name  
8. Press 8 to enter program name  
9. Press 9 to enter program name  
10. Press 10 to enter program name

### PROGRAM LIST PREFERENCE

1. Press 1 to enter program name  
2. Press 2 to enter program name  
3. Press 3 to enter program name  
4. Press 4 to enter program name  
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6. Press 6 to enter program name  
7. Press 7 to enter program name  
8. Press 8 to enter program name  
9. Press 9 to enter program name  
10. Press 10 to enter program name

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# COMP

Slight changes were made to the listing of our CIB and Mac® program REBOUND in the October 1987 issue of the magazine after the test was produced.

The listing was carried in the magazine. There is only one part to it and two as indicated in the test. This listing should be carried as described using the MONITOR function of the computer.

To use the program you should LOAD it from within the monitor as follows:

L: REBOUND ;all  
where n is 1 if using tape or 2 if using disk. Then enter CHGO to RUN the program.

## 'Thing' Competition Winners

Are you a winner in the Thing competition from August 1987? Read on and find out.

Ian Forbes, London; Gordon Mink, Slough; C. Fox, Clond, Edina; Ralphie, Harmerwick; M. Leon, Harmerwick; M. Roberts, Thameston; Paul Hama, Dedpur, Harmerwick; Knightley, Paul, Wincanton; Southampton; K. Williams, London; Neil Humphrey, Barking.

## Bug Finder

We'd like to reward our readers that we have a Bug Finder service.

If you have typed in one of our programmes and despite much checking, you still can't get it to run, then send us the following:

Two copies of your program on tape or disk.

A description of your problem.

If possible a listing of your work (you may omit this).

A stamped self-addressed envelope for return of the program to you.

Should any of the above be missing,

George Bell, Dunbarton; H. Speck, Dulcet, Trevor Cross, Farnham; Steven Hadden, Charleston; Andy Claven, Clarendon; B. Allington, Keyworth; P. Hinton, H.Q. Akens; M. Hinton, Hinton; David MacDonald, Farnborough.

then we will not be able to deal with your query.

We will try to point out where you have made errors and place a corrected copy of the program back on to your tape or disk before we return it to you.

Do not send a program to us as soon as it stops working: please check a second time first.

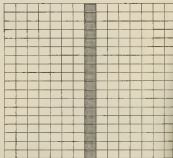
We do get a large number of queries and so it may take a while for us to deal with yours personally.

Note we can only deal with problems relating to programmes published in *Your Commodore*.

## Puzzle

Solve the cryptic clues below and then enter the answers, which are all computer related, on the grid in such a way that making down the central column will give you a phrase associated with computers.

1. Train maps temporary storage area (7)
2. Set of instructions on the box (7)
3. Break in line print (8)
4. Resizable memory from 1000 point less ropes (5)
5. Language rules used like VAT in Scots (6)
6. Neural computer? (9)
7. Blower pump saved print producer (10)
8. Point switches on or off (6)
9. Cart was off for storage device (10)
10. From in two thousand about data connection (5)
11. Program made few ropes (5)
12. Indicate word alignment (7)
13. Endless storage (word) gets a computer (5)
14. A real data producer data connection frequency (4, 4)
15. Using DMT on number 2? (6)
16. Language learned after castle (7)



17. Your word is part of the program (7)

18. Machine code substitution (10)





*It plays like a dream...  
but seems like a **NIGHTMARE!***

**TRAPPED** – in a 1970's arcade machine! Every escape route is blocked by a wall of brightly coloured bricks. Powerfully addictive, with 200k of digitized sound, **IMPACT** has 80 built in screens plus 48 that you can design yourself – as hard, as simple, as much fun as you like. Hidden on each screen are special tokens – catch them if you can. Use them to buy one of nine powerful weapons, or keep them until the end of the screen to score a bonus.



Available now, price £14.95 for Amiga (512k min.) and Atari ST (requires 512k, mouse and colour monitor or TV).  
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levels – as hard, as simple, as much fun as you like  
to play – catch them if you can. Use them to buy one of nine  
levels at the end of the screen to score a bonus.



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Volume 4 Number 2